

Relocation of the Explosive Ordnance Disposal Demolition Training Range

Environmental Assessment

Final
July 2000

**Naval Air Station, Whidbey Island
Seaplane Base
Oak Harbor, WA
Department of the Navy**

20010215117





DEPARTMENT OF THE NAVY
ENGINEERING FIELD ACTIVITY, NORTHWEST
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5090
Ser 05EC.4KK/0089
JAN 30 2001

Dear Interested Party:

Subject: AVAILABILITY OF ENVIRONMENTAL ASSESSMENT AND FINDING
OF NO SIGNIFICANT IMPACT

The enclosed Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) is forwarded for your information. The EA addresses the construction and operation of a new Explosives Ordnance Disposal Demolition Training Range at Naval Air Station Whidbey Island (NASWI), Seaplane Base, Oak Harbor, Washington. The FONSI is a determination that this project will not significantly impact human health and environment; therefore, an Environmental Impact Statement is not required. Copies of the EA and FONSI are being distributed to potentially interested elected officials, agencies, Native American tribes, and the Oak Harbor Library. Additionally, a public notice of availability was published in the Whidbey News-Times on January 24, 27, and 31, 2001.

The coordination and review effort of all who participated in the development of this EA is appreciated. If desired, additional copies of this EA may be obtained by calling Ms. Kimberly Kler at Engineering Field Activity, Northwest in Poulsbo, Washington at (360) 396-0927.

Sincerely,

A handwritten signature in cursive script, reading "Kimberly H. Kler", is positioned above the typed name.

KIMBERLY H. KLER
Environmental Planner

Enclosures:

- (1) EA for Relocation of the EOD Demolition Training Range at Seaplane Base, NASWI
- (2) FONSI for Relocation of the EOD Demolition Training Range at Naval Air Station Whidbey Island, Oak Harbor, Washington

DEPARTMENT OF DEFENSE
DEPARTMENT OF THE NAVY

FINDING OF NO SIGNIFICANT IMPACT FOR THE RELOCATION OF THE
EXPLOSIVE ORDNANCE DISPOSAL DEMOLITION TRAINING RANGE AT NAVAL
AIR STATION WHIDBEY ISLAND, ISLAND COUNTY, WASHINGTON

Pursuant to Council on Environmental Quality Regulations (40 CFR Parts 1500-1508) implementing procedural provisions of the National Environmental Policy Act, the Department of the Navy gives notice that an Environmental Assessment (EA) has been prepared and an Environmental Impact Statement is not required for the relocation, construction and operation of an Explosive Ordnance Disposal (EOD) Demolition Training Range (DTR) at Naval Air Station, Whidbey Island (NASWI), Oak Harbor, Island County, Washington.

The purpose of the proposed action is to relocate, construct and operate a new EOD DTR at Seaplane Base, NAS Whidbey Island, Oak Harbor, Washington to replace the existing range that will become inactive for an indefinite period of time due to the reactivation of ordnance magazines 444/445. The proposed action would include a 10-ft radius enclosure composed of barricades surrounding the detonation point to deflect the explosive energy. The barricades will be constructed of wood, plastic lumber or concrete and will measure approximately 8 ft tall and 8 inches thick. A 12-inch layer of sand will be placed inside the barricade. A 50-ft radius clear zone would be cleared of all combustible vegetation and a security fence installed. The DTR will be used by EOD Mobile Unit (EODMU) ELEVEN for up to 5-lb Net Explosive Weight (NEW), trinitrotoluene (TNT) equivalent, of non-fragment producing materials. Although non-fragment producing ordnance will be used, detonation of 5-lb explosives could theoretically mobilize sand to travel up to 1,075 ft from the detonation point, termed the "fragmentation arc". The new EOD DTR will be operated by EODMU ELEVEN and EODMU SEVENTEEN (a Naval Reserve Unit) for approximately 15 detonations per week. Most use of the DTR will occur Monday through Friday between 7 a.m. and 10 p.m. The DTR will also be used one weekend per month to meet the training requirements of EODMU SEVENTEEN and other Department of Defense units.

The proposed site for the new DTR is on a terraced grassy clearing on a hillside immediately north of the road that parallels the Crescent Harbor shoreline, referred to as the Terrace Site. The Terrace Site is located within a secured area of NASWI. The site and surrounding fields and forests are currently used for a variety of training activities, including survival and small unit combat tactics training. The proposed action requires all vegetation including ground cover within a 50-ft radius of the detonation pit to be removed through regular site grading. A lockable metal storage unit would be placed at the site. Access to the Terrace Site would be controlled by the Navy's existing perimeter fence and additional security fencing installed around the clear zone. The proposed action would not result in significant impacts to the environment. The proposed action complies with the 1999 Draft RSIP land use designation of General Mission Support for this part of Seaplane Base.

Three other Seaplane Base sites were considered for alternative siting options and subsequently eliminated because they cannot meet all five exclusionary criteria: (1) Meets EODMU ELEVEN training needs; (2) Compatible with missions of all NASWI units; (3) Consistency with the Draft Puget Sound Regional Shore Infrastructure Plan; (4) Complies with Navy directives for no net loss of wetlands habitat; and (5) Avoids significant impacts to the environment. A site on the northeast shore of the Polnell Point peninsula was also evaluated but eliminated because operations at this site would result in adverse effects to nesting bald eagles and would increase the probability of causing significant peak noise levels in the residential areas adjacent to the Seaplane Base. The "no action" alternative would result in no DTR being constructed and operated at NASWI, requiring EODMU ELEVEN to travel to the Yakima Training Center or other military installations for detonation training. This alternative was eliminated because it does not meet the mission readiness of EODMU ELEVEN personnel.

The proposed project area is within the Island County area of the Northwest Air Pollution Authority (NWAPA) and is currently designated as "attainment" for all criteria air pollutants. Construction activities associated with the proposed project would generate locally elevated levels of exhaust emissions and fugitive dust, due to clearing vegetation (no woody vegetation to be removed and burned), grading the site, and movement of construction equipment. These impacts are localized, temporary, and will be mitigated by applying dust control measures. The proposed action will result in air emissions of ammonia, hydrogen cyanide and carbon monoxide. The amounts of these

emissions are well below the level of significance as regulated by Washington Department of Ecology and Environmental Protection Agency. Air emissions from both stationary and mobile sources will have a less-than-significant impact on the regional air quality. The NWAPA permit will be updated to reflect the new DTR and burn box location.

No significant construction noise impacts will occur from the proposed action. Modeling indicates that increasing the explosives from 0.5 to 5.0 lbs. NEW explosives would create potentially significant impacts to nearby residents. Implementing the following mitigation measures can minimize operational noise impacts. To greatly reduce the potential for noise complaints and to eliminate the potential for damage, detonations should only be conducted during specific meteorological conditions that take into account the temperature gradient, wind direction and speed, and amount of explosive to be detonated. As part of this noise mitigation measure, detonations at the DTR will establish a new Standard Operating Procedure that takes into account the meteorological conditions specified in the following table.

Net Explosive Weight (NEW) allowable at the Terrace Site Alternative under various meteorological conditions to limit off-station noise levels to < 120 dBP.^{1,2}

General Conditions	Wind Speed/Direction ³	Net Explosive Weight (NEW) Permitted
Sunny spring and summer days April—September (1000—1600 hrs)	≥ 16.8 mph (7.5 m/sec)—50°—160°, or ≥ 11.2 mph (5 m/sec)—45°—145°, or ≥ 6.7 mph (3 m/sec)—70°—125°	Up to 5 lbs (2.3 kg)
Sunny spring and summer days April—September (0800—2200 hrs)	≥ 16.8 mph (7.5 m/sec)—45°—170°, or ≥ 11.2 mph (5 m/sec)—45°—160°, or ≥ 6.7 mph (3 m/sec)—45°—150°, or ≥ 4.5 mph (2 m/sec)—35°—135°	Up to 3 lbs (1.4 kg)
Cloudy spring or summer days (mostly cumulus, no stratoform clouds below 3000 ft) or fall and winter days with no clouds or mostly cumulus clouds	≥ 16.8 mph (7.5 m/sec)—25°—180°, or ≥ 6.7 mph (3 m/sec)—15°—180°, or ≥ 4.5 mph (2 m/sec)—5°—180°, or < 4.5 mph (2 m/sec)—0°—200°	Up to 1 lb (0.4 kg)
Cloudy winter or fall days with stratoform clouds where no "broken" or "overcast" layers are reported below 3,000 ft.	≥ 16.8 mph (7.5 m/sec)—15°—190°, or ≥ 11.2 mph (5 m/sec)—5°—170°, or ≥ 6.7 mph (3 m/sec)—340°—205°, or ≥ 4.5 mph (2 m/sec)—295°—205°, or < 4.5 mph (2 m/sec)—0°—360°	Up to 0.5 lb (0.2 kg)

¹ 120 dBP is threshold of increasing risk of receiving noise complaints from public.
² An overriding condition for detonation of any NEW is that no temperature inversion exists below 5,000 ft.
³ Wind directions are expressed in degrees from magnetic north.

In addition EODMU ELEVEN will conduct an "open house" to inform, educate and establish correspondence with the residents affected by high noise levels and the expected frequency of occurrence of detonations as well as what they may experience (e.g., rattling of windows).

To ensure that the Proposed Action is consistent with the Washington Coastal Zone Management Plan (CZMP) and the City of Oak Harbor's Shoreline Master Program, the Navy will acquire a Coastal Zone Consistency Determination.

No significant impacts to recreational resources will occur from the proposed action. The proposed action would preclude recreational access (shore and water-based) within the 1,075-ft radius worst-case fragmentation arc.

No significant impacts to historic and cultural resources will occur from the proposed action. The proposed site is located in an identified archeological sensitive area however, because the site has an existing access road and the DTR itself would be located on a previously constructed terrace, no disturbance to previously undisturbed areas are likely to occur.

No impacts to either aesthetic/visual resources water quality or geology/soils resources will occur from the proposed action.

The US Fish and Wildlife Service has indicated that the proposed action at the Terrace Site would not disturb bald eagles at Polnell Point. Demolition training will not occur when marine mammals are present on the "haul-out rocks" located just off shore from the proposed site. No impacts on any other fish and wildlife or threatened and endangered species will occur from the proposed action.

There will not be any disproportionately high and adverse human health and safety risks or environmental effects from the action on children and minority and low-income populations. As long as detonations occur during favorable meteorological conditions, no adverse physiological effects are anticipated.

Cumulative effects of the proposed action in combination with other past, present, or reasonably foreseeable future actions were also analyzed. Based on this analysis, cumulative impacts would not be significant.

Based on information gathered during preparation of the EA, the Navy finds that the relocation, construction and operation of an EOD DTR at Naval Air Station, Whidbey Island, Island County, Washington will not significantly impact the environment.

The EA addressing this action may be obtained from: Commanding Officer, Naval Air Station Whidbey Island, Environmental Affairs Department 1155 West Lexington Building 113 Oak Harbor, Washington 98278-3800 (Attention: Ms. Kathryn Souders, Code N44); telephone (360) 257-1009. Copies of the EA may also be reviewed at the Oak Harbor City Library, Oak Harbor, Washington, and the Sno-Isle Regional Library in the Town of Coupeville, Washington.

22 DEC 2000

Date



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Relocation of the Explosive Ordnance Disposal Demolition Training Range Environmental Assessment

Final

Prepared for:

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Under Contract by:

**Engineering Field Activity, Northwest
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July 2000

**DISTRIBUTION STATEMENT A
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ABSTRACT

The Department of the Navy (Navy) has prepared this Environmental Assessment (EA) to evaluate the potential environmental effects associated with the proposed relocation and operation of a Explosive Ordnance Disposal (EOD) Demolition Training Range (DTR) at Seaplane Base, Naval Air Station, Whidbey Island (NASWI), Island County, Washington. The proposed DTR is needed to provide on-station demolition training for EOD Mobile Unit (EODMU) ELEVEN personnel in support of their mission. The site would be used by the EODMU ELEVEN for up to 5-lb (2.3 kg) Net Explosive Weight (NEW), trinitrotoluene (TNT) equivalent, of non-fragment producing materials. The range would not be used as an explosive disposal site. Under the Proposed Action, the DTR would be used by the EODMU ELEVEN and EODMU SEVENTEEN, the Navy Reserve Unit, for up to 15 detonations per week. Most use of the DTR would occur Monday through Friday 7 a.m. to 10 p.m. The DTR would also be used one weekend per month to meet the training requirements of EODMU SEVENTEEN and other Department of Defense (DoD) units. The proposed facility would replace an existing range that will become inactive for an indefinite period of time due to the reactivation of ordnance magazines 444 and 445.

The Proposed Action would include construction of a 20-ft by 20 ft (6 x 6 m) barricade surrounding the detonation point to deflect the explosive energy (see Figure 2.1-3). The barricades would be constructed of wood, plastic lumber, or concrete and would measure approximately 8 ft (2.4 m) tall and 8 inches (20 cm) thick. A 12-inch (30 cm) layer of sand would be placed in the pit. The range would be built in the summer or fall of 2000 and become operational soon after construction.

This EA addresses the potential impacts of the Proposed Action consisting of constructing and operating a new EOD Training Range at two alternative locations at the Seaplane Base: (1) Polnell Point, and (2) Terrace Site, as well as a No Action Alternative. Under the No Action Alternative, the existing training range would become inactive and no EOD training would take place at NASWI. The Navy also considered options for conducting training at the Army's Yakima Training Center (YTC) or at the Navy Boardman Bombing Range in Oregon. Neither of these options would meet the training needs of the Navy due to the distance from NASWI. As a result, they were not considered in the detailed analysis of this EA.

Based on analysis of the two action alternatives and the No Action Alternative, this EA concludes that the Terrace Site represents the environmentally preferred alternative. The Polnell Point Alternative would result in adverse effects to nesting bald eagles and would increase the probability of causing significant peak noise levels in the residential areas adjacent to the Seaplane Base. A Finding of Non-Significant Impacts (FONSI) is recommended for the Terrace Site Alternative.

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ACRONYMS AND ABBREVIATIONS

µg	micrograms
ACHP	Advisory Council on Historic Preservation
ACHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
ACOE	U.S. Army Corps of Engineers
AICUZ	Air Installation Compatible Use Zone
BEMP	Bald Eagle Management Plan
BMPs	Best Management Practices
BQ	Bachelor Quarters
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CITES	Convention on International Trade in Endangered Species
cm	centimeter
CO	carbon monoxide
CZMP	Coastal Zone Management Plan
dB	decibels
dBA	decibels, A-weighted
dBc	decibels, C-weighted
dBp	decibels, unweighted peak
DCA	Department Consulting Archaeologist
DoD	Department of Defense
DTR	Demolition Training Range
EA	Environmental Assessment
EIS	Environmental Impact Statement
ENM	Environmental Noise Model
EOD	Explosive Ordnance Disposal
EODMU	EOD Mobile Unit
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESQD	Explosive Safety Quantity Distance
ESU	Evolutionarily Significant Unit
FAA	Federal Aviation Administration
FONSI	Finding of No Significant Impact
FPD	Fire Protection District
FR	Federal Register
gpm	gallons per minute
ha	hectare
hr	hour
Hz	hertz
ICGWMP	Island County Ground Water Management Program
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
kHz	kilohertz

ACRONYMS AND ABBREVIATIONS (continued)

km	kilometer
cts	knots
l	liter
L90	Sound level exceeded 90% of the time
Ldn	day-night sound level
Leq	single value of sound level for any desired duration
Lmax	maximum noise levels
lpm	liters per minute
m	meter
MHWL	Mean High Water Level
MILVAN	A secure, lockable storage locker
MMPA	Marine Mammal Protection Act
mph	miles per hour
MWR	Morale, Welfare, and Recreation
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NANCO	National Association of Noise Control Officials
NASWI	Naval Air Station, Whidbey Island
NAVSEA	Naval Sea Systems Command
Navy	Department of the Navy
NEPA	National Environmental Policy Act
NEW	Net Explosive Weight
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO ₂	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NO _x	oxides of nitrogen
NRHP	National Register of Historic Places, or National Register
NSWC/DL	Naval Surface Warfare Center, Dahlgren Laboratory
NWAPA	Northwest Air Pollution Authority
NWI	National Wetlands Inventory
O ₃	ozone
OFM	Office of Financial Management
OP	Operations
OS	Open Space (land use designation)
OSHA	Occupational Safety and Health Administration
Pb	lead
PL	Public Law
PM	particulate matter
ppm	parts per million
PTS	Permanent Threshold Shifts
ROC	Record of Communication

ACRONYMS AND ABBREVIATIONS (continued)

RSIP	Regional Shore Infrastructure Plan
SHPO	State Historic Preservation Officer
SIPS	Sound Intensity Production System
SLM	Sound Level Measurement
SMMP	Shoreline Management Master Program
SOP	Standard Operating Procedure
SOX	sulfur dioxides
TCP	Traditional Cultural Property
TES	Threatened, Endangered, or Sensitive
TNT	trinitrotoluene
TR	Training
TSP	total suspended particulates
TTS	Temporary Threshold Shifts
USC	U.S. Code
USCG	U.S. Coast Guard
USFWS	U. S. Fish and Wildlife Service
VOC	volatile organic compound
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WDOE	Washington State Department of Ecology
YTC	Yakima Training Center

1.0 INTRODUCTION

The Department of the Navy (Navy) has prepared this Environmental Assessment (EA) to evaluate potential environmental effects associated with the proposed relocation and operation of a Navy Explosive Ordnance Disposal (EOD) Demolition Training Range (DTR) at the Seaplane Base, Naval Air Station, Whidbey Island (NASWI). The potential environmental effects are addressed pursuant to the requirements of the National Environmental Policy Act (NEPA) and subsequent implementing regulations issued by the Council on Environmental Quality (CEQ) (40 CFR 1500-1508).

The DTR would be maintained and operated by Navy qualified/certified EOD technicians attached to EOD Mobile Unit (EODMU) ELEVEN, following Standard Operating Procedures for non-emergency explosive ordnance disposal operations (EODMU ELEVEN INST 3120.1D) that will be revised for the new DTR site. EODMU ELEVEN's mission is generally defined as the detection, identification, and field disposition of unexploded explosive ordnance. For EOD personnel to carry out their mission, they must requalify at least monthly in the preparation, placement, and detonation of explosive materials. To ensure optimum combat readiness, this training should be conducted weekly in accordance with OPNAVINST 8027.6B. Typical EOD detonation training activities involve teams of approximately 10 personnel.

DTR site requirements are summarized in NAVSEA OP 5 and include the following:

- A radius of 500 ft (152 m) for training use;
- A 50-ft (15 m) radius clear zone from the point of detonation; which is cleared of all vegetation and combustible materials; and
- Relatively flat terrain within the 50-ft (15 m) radius.

Additional requirements deemed necessary for an EOD DTR include: (1) complete access control by the EODMU ELEVEN command, (2) explosive ordnance storage magazines available at the Seaplane Base, and (3) desirable Command location relative to the detonation site location to increase training opportunities.

The two alternate sites being evaluated for construction of a new EOD DTR are located on NASWI property on currently undeveloped land at the eastern end of the Seaplane Base near the City of Oak Harbor, Washington. The Proposed Action would include a 20-ft by 20-ft (6 x 6 m) enclosure surrounding the detonation point. The barricades would be constructed of either wood, plastic lumber, concrete, and/or sand bags in compliance with Navy regulations (NAVSEA OP 5 Volume 1, Sixth Revision) and would measure 8 ft (2.4 m) tall and 8 inches (20 cm) thick. A 12-inch (30 cm) layer of sand would be placed in the barricade. The range would be built in the summer or fall of 2000 and become operational soon after construction. Access would be controlled by chain-link perimeter fencing and gates. Additional access control measures would include use of security patrols during hours of active range operations.

The proposed project would also include installation of a MILVAN (a secure, lockable, metal storage locker) within proximity of the range. In addition, an emergency burn box (a steel 4 x 6 ft [1.3 x 1.9 m] hinged box) would be used for emergency treatment of partially expended MK-25/58 marine markers. After a new DTR is operational, the existing EOD DTR located next to ordnance magazines 444 and 445 at the Seaplane Base would become inactive, but would remain in place.

This EA includes six sections. This section (Section 1) provides background information on authority and jurisdiction and the purpose and need of the Proposed Action. Section 2 includes: (1) descriptions of the two alternatives for the Proposed Action, as well as the No Action Alternative; (2) a discussion of the various EOD DTR siting options considered but eliminated from further consideration; (3) a summary of the environmental effects of the three alternatives considered in detail; and (4) a summary of mitigation measures for the Proposed Action if implemented. Section 3 describes the affected environment, environmental consequences, and mitigation measures for resources potentially affected by the two alternatives and the No Action Alternative. The cumulative and long-term effects are addressed in Section 4. References are provided in Section 5 (including literature cited in the document as well as Records of Communication [ROC]), and the list of preparers and distribution list are presented in Section 6.

1.1 AUTHORITY AND JURISDICTION

This document is intended to meet the statutory requirements of NEPA, as amended by Public Law (P.L.) 91-190, 42 United States Code (USC) 4347. Conformance with this law is being carried out under the provisions of the Department of the Navy's *Environmental and Natural Resources Program Manual* (OPNAVINST – 5090.1B, CH-2, September 9, 1999). As stated in OPNAVINST – 5090.1B – Chapter 2-5.3.1:

An EA is an analysis of the potential environmental impact of a Proposed Action. Action proponents must prepare an EA when they do not know beforehand whether or not the will significantly affect the human environment or be controversial regarding environmental effects. An EA will either result in a Finding Of No Significant Impact (FONSI), or, if a significant impact is expected, preparation of an Environmental Impact Statement (EIS).

The Navy must evaluate the Proposed Action (see Section 2.1) to determine the significance of potential effects and the adequacy of proposed mitigation measures. Based on this EA, the Navy has concluded that a FONSI is recommended for the Terrace Site Alternative, which is the environmentally preferred alternative.

1.2 PURPOSE AND NEED

The purpose of the EOD DTR is to meet minimum requirements for basic proficiency in combat and non-combat EOD readiness. Navy qualified/certified EOD technicians

attached to EODMU ELEVEN, a tenant command at NASWI, must re-qualify at least monthly in the preparation, placement, and detonation of explosive materials. EODMU ELEVEN currently utilizes a DTR at the Seaplane Base for demolition of explosives. This DTR must become inactive due to the reactivation of the nearby ordnance magazines 444 and 445 that will result in additional Explosive Safe Quantity Distance (ESQD) restrictions (17 April 2000 memo from NASWI Weapons Officer). The existing DTR is rated for detonation of up to 5 lb (2.3 kg) Net Explosive Weight (NEW) but has a 0.5-lb (0.2 kg) limit for noise abatement purposes. In cases where detonation of explosives greater than 0.5 lb (0.2 kg) are required, EODMU ELEVEN must travel to the Yakima Training Center (YTC). To maintain mission readiness, the DTR must be relocated to another location at NASWI. In addition, an increase in NEW from the currently allowable 0.5 to 5 lb (0.2 to 2.3 kg) trinitrotoluene (TNT) equivalent of uncased, non-fragment producing bulk explosives is desired to reduce the cost of travelling to other Department of Defense (DoD) installations and increase mission training readiness. The proposed increase in NEW would improve the range of training exercises available to EODMU ELEVEN. The new DTR would be used on weekdays by EODMU ELEVEN and one weekend per month by EODMU SEVENTEEN, the Navy Reserve Unit. No more than 15 detonations would occur in any one week, as currently approved for the DTR. The DTR would be used as an explosive disposal site only for emergency treatment of ordnance.

Construction of the proposed DTR at NASWI is a short- and long-term need of the Navy. Without this proposed facility, the EODMU ELEVEN personnel would have to travel at least 10 hours weekly to the YTC, Boardman Bombing Range, or other military facility. Permanently relocating the EODMU ELEVEN is not a viable option to meeting its mission requirements. These options would not meet EODMU ELEVEN's operational needs, training schedules, and available funds.

Due to the need for the DTR to be located near ordnance magazines, the proposed facility must be located at the Seaplane Base. No other Navy properties at NASWI are desirable for constructing the proposed DTR.

2.0 PROPOSED ACTION AND ALTERNATIVES

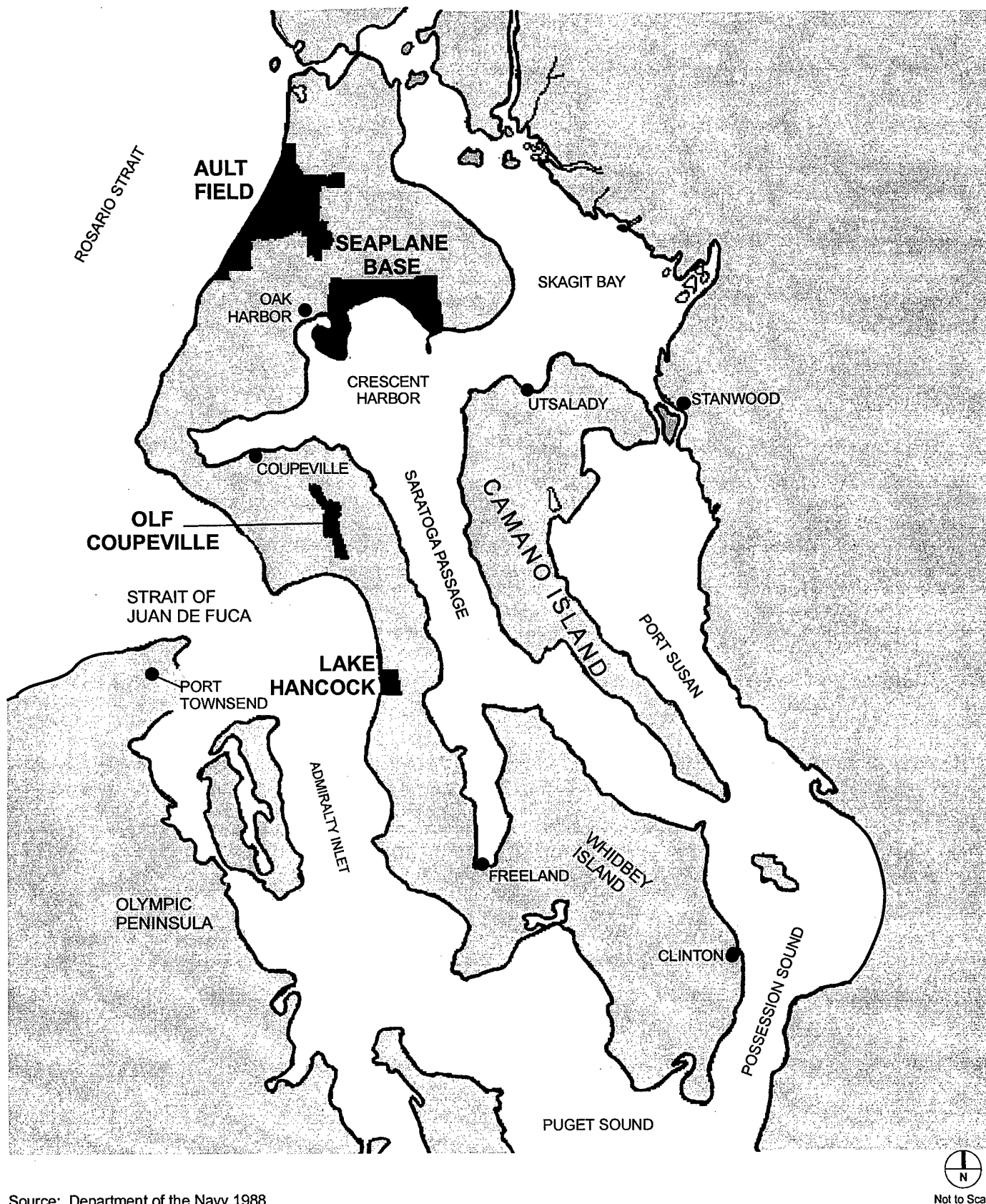
The following section describes the Navy's Proposed Action and alternatives evaluated in this EA. NEPA requires that the effects of the Proposed Action be evaluated for a reasonable range of alternatives and that these "action" alternatives be measured against existing conditions known as the No Action Alternative.

2.1 DESCRIPTION OF PROPOSED ACTION

The Navy proposes to relocate, construct, and operate an EOD DTR at the Seaplane Base, NASWI, Island County, Washington (Figures 2.1-1) to replace the existing DTR, also at the Seaplane Base. The existing EOD DTR would be inactivated but not closed. Two potential sites are being evaluated in this EA. One site is on Polnell Point; the second alternative would place the DTR northwest of Polnell Point at a terraced clearing overlooking Crescent Harbor (Figure 2.1-2). The existing EOD DTR is located 8,160 ft (2,487 m) from the Polnell Point Site and 4,080 ft (1,244 m) from the Terrace Site.

At either location, the Proposed Action would include construction of a 20-ft (6-m) square enclosure composed of barricades intended to deflect explosions and noise upward. These barricades would be constructed of wood, plastic lumber, concrete, or sand bags in compliance with Navy regulations (NAVSEA OP 5 Volume 1, Sixth Revision). If constructed out of timbers, the enclosure would measure 8 ft (2 m) tall and 8 inches (20 cm) thick (Figure 2.1-3). A 12-inch layer (30 cm) of sand would be placed inside the barricade. A 50-ft (15 m) radius clear zone would be cleared of all combustible vegetation and a security fence installed. The range would require 1 to 2 weeks to build in the summer or fall of 2000; the facility could become operational immediately after construction. Once the new DTR is operational, the existing EOD DTR located near ordnance magazines 444 and 445 at the Seaplane Base would become inactive when the adjacent ammunition bunkers are reactivated but would remain in place.

The new EOD DTR would be operated for approximately 15 detonations per week, Monday through Friday between 7 a.m. and 10 p.m. Ordnance used during this training would be limited to 5 lb (2.3 kg) TNT equivalent of uncased, non-fragment producing bulk explosives. Although non-fragment producing ordnance will be used, detonation of 5-lb (2.3 kg) explosives could theoretically mobilize sand to travel up to 1,075 ft (328 m) from the detonation point (ROC, Petersen, 8/31/99). For the purpose of this EA, we use the term "fragmentation arc" to represent the theoretical area within which sand could be mobilized. These potential "fragmentation arcs" associated with the Proposed Action alternatives are shown in Figure 2.1-2. Training exercises would occur primarily during daylight hours during suitable weather conditions. Approximately 10 personnel are typically involved in the EOD demolition training exercises. Ordnance used for training would be stored in one of the existing magazines at the Seaplane Base, consistent with current operations. A small number of military vehicles would be used to transport personnel and ordnance to and from the DTR on the Seaplane Base. A navigation



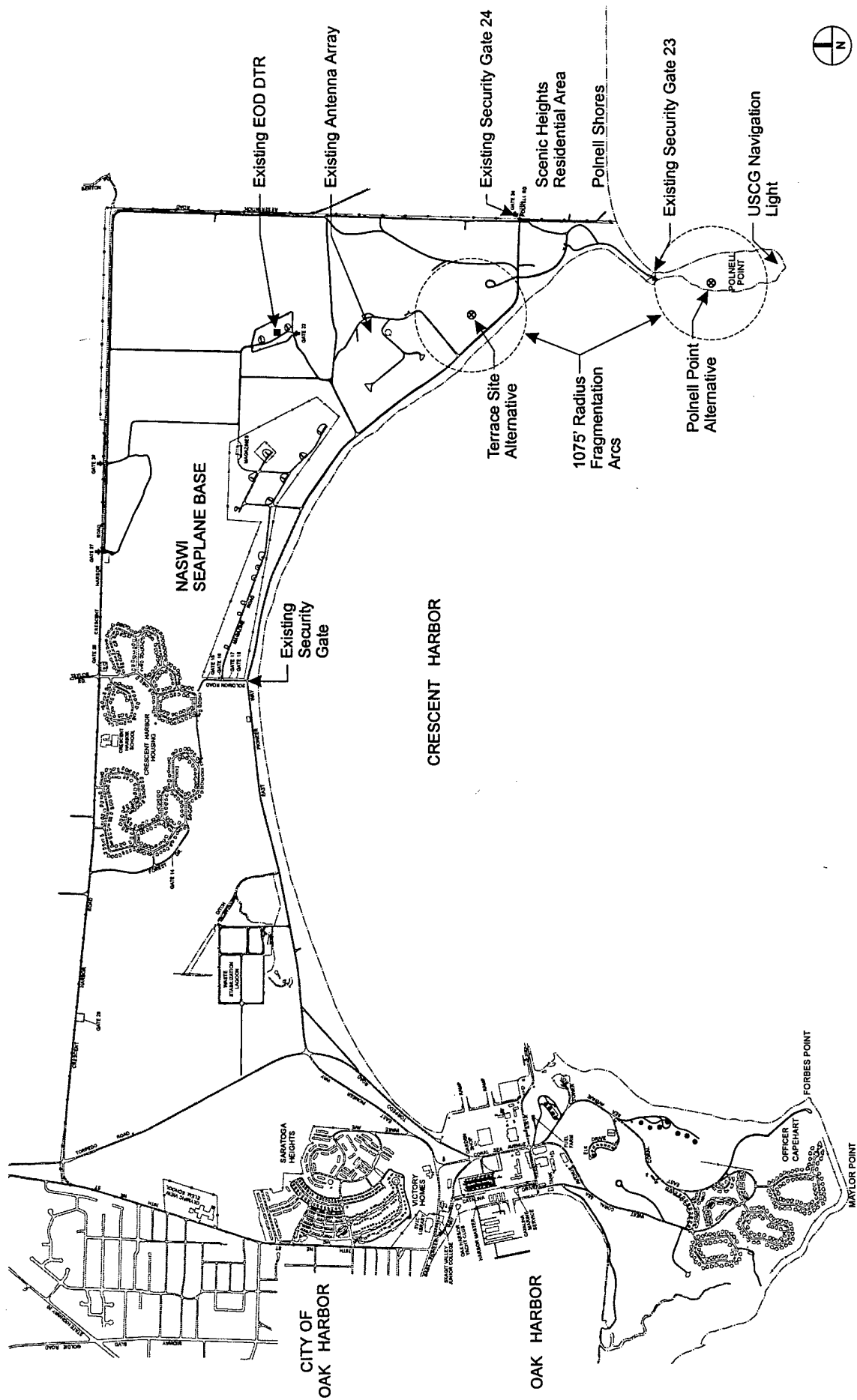
Source: Department of the Navy 1988

Not to Scale

Environmental Assessment
for EOD Detonation Training Range
Seaplane Base, NASWI

**NASWI Facility Locations
on Whidbey Island**

Figure 2.1-1

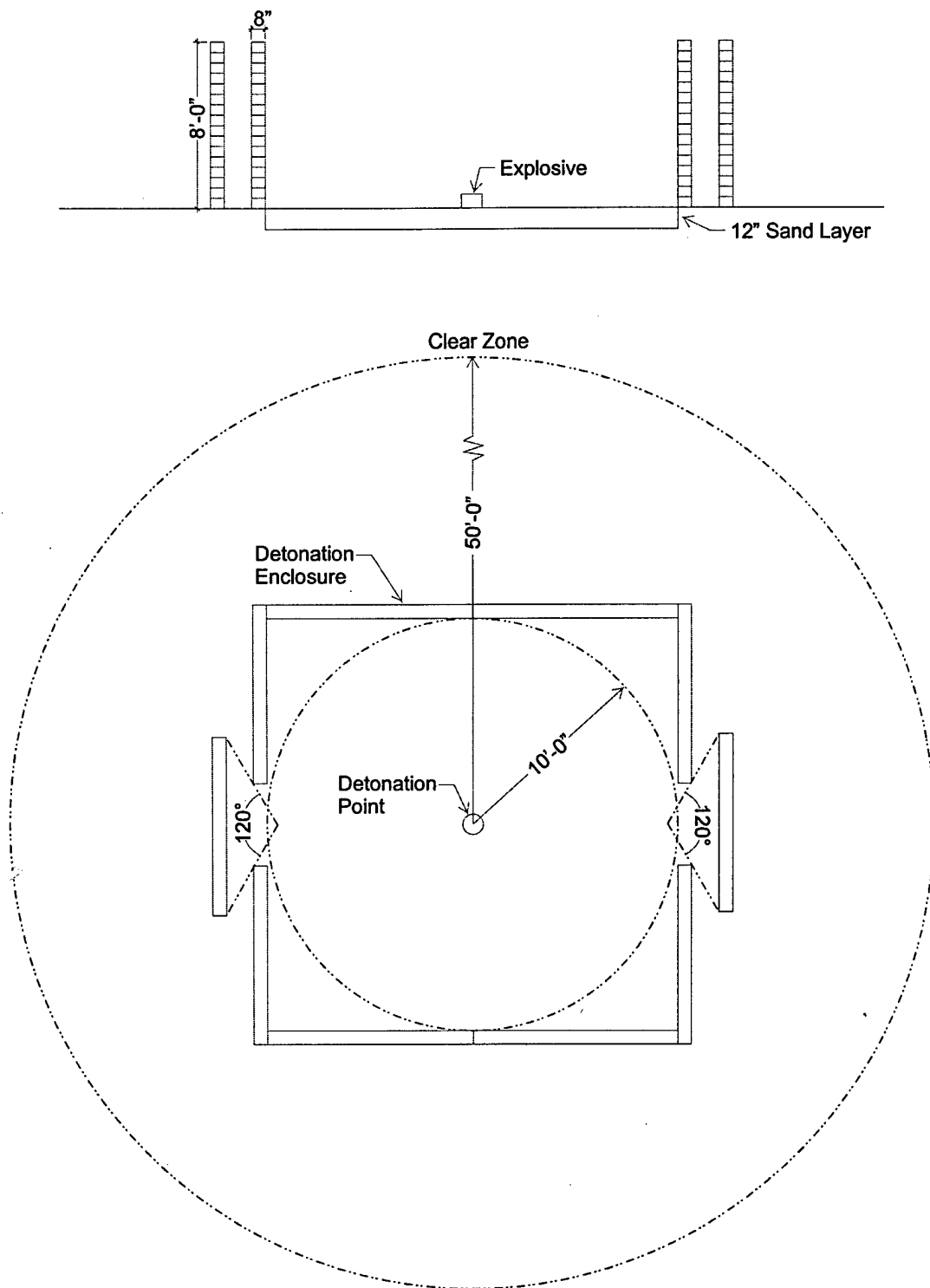


Source: Department of the Navy 1988

Environmental Assessment
EOD Detonation Training Range
Seaplane Base, NASWI

Vicinity Map

Figure 2.1-2



Source: Department of Navy, NAVSEA OP 5 6th Revision

Scale: 1/8" = 1'-0"

Environmental Assessment
for EOD Detonation Training Range
Seaplane Base, NASWI

**Schematic of Proposed
Detonation Training Range**

Figure 2.1-3

restriction area would be established in the eastern portion of Crescent Harbor through U.S. Army Corps of Engineers (ACOE) permit requirements for 1,075 ft (328 m) from the point of detonation.

2.2 DESCRIPTION OF ALTERNATIVES IN THE EA

This EA evaluates two alternatives to implement the Proposed Action, as well as a No Action Alternative as required by NEPA. The Navy selected the two action alternatives from a total of five potential DTR siting options. The two Proposed Action alternatives and the No Action Alternative are discussed in Sections 2.2.1 through 2.2.3. An evaluation of the three options eliminated from detailed analysis in this EA is presented in Section 2.3.

2.2.1 Polnell Point Alternative

The Polnell Point Alternative would include developing a DTR on the northwest shore of the Polnell Point peninsula (Figure 2.1-2). The proposed site is currently overgrown with shrubs and sapling coniferous and deciduous trees. A mature forest of large coniferous trees dominates the landscape on top of the bluff and borders the eastern and southern edges of the site. A steeply sloping bluff flanks the east and southeast of the proposed site, rising up from a cobble beach (Figure 2.2-1).

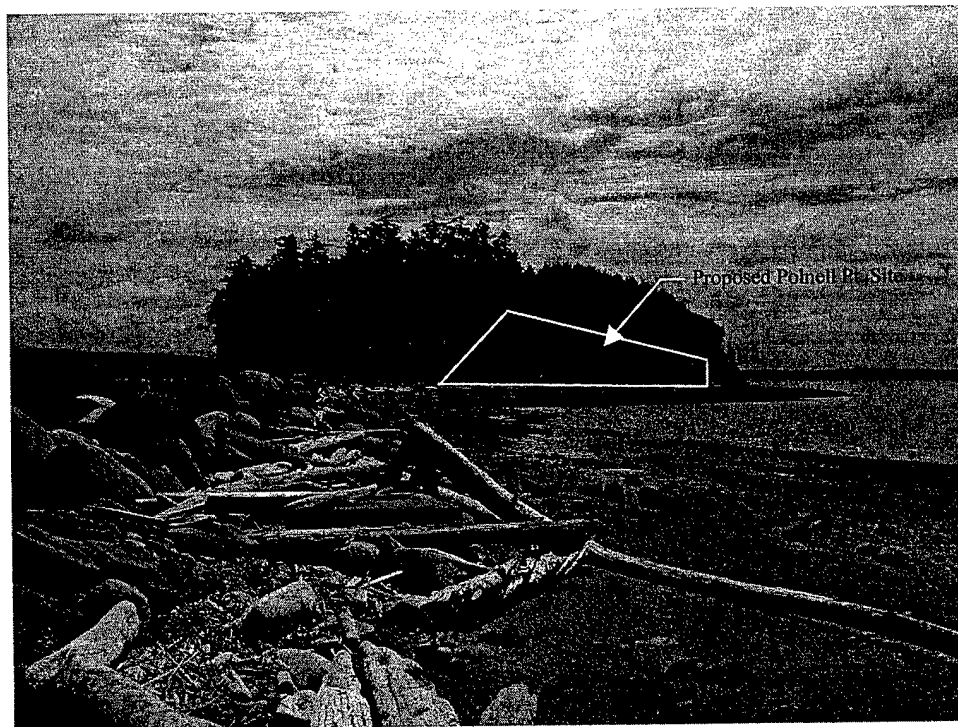


Figure 2.2-1. Existing conditions of the Polnell Point Site showing general location of proposed DTR.

The proposed Polnell Point Site was historically used for ordnance detonation until the early 1980s (ROC, Petersen, 8/31/99). Public access to the entire peninsula is prohibited by large "no trespassing" signage and fencing at the NASWI boundary to the east and a gate on the Crescent Harbor Road approximately 1,750 ft (533 m) to the west. Polnell Shores, a civilian residential subdivision that comprises a portion of the Scenic Heights neighborhood, is located approximately 2,300 ft (701 m) from the Polnell Point Alternative Site (Figure 2.1-2).

If the Polnell Point Alternative is selected, the 50-ft (15 m) radius area clear zone in which all combustible vegetation is removed (NAVSEA OP5) would extend from the shoreline to the base of the bluff (Figure 2.1-3). All vegetation within this area including groundcover would be removed through regular site grading. Approximately 2,000 ft (610 m) of unimproved and currently overgrown road leading to the site from the mainland would be cleared of vegetation and regraded with stone. A metal storage unit (MILVAN) would be placed somewhere near the site. Access to the Polnell Point site would be controlled by an existing fence on the mainland end of the isthmus. Additional signage would be installed at the fence and warning buoys placed around Polnell Point to prohibit boat access during training exercises within the 1,075-ft (328 m) radius worst-case fragmentation arc of the detonation. Security patrols would be utilized to ensure that the public do not enter the restricted area during detonations.

2.2.2 Terrace Site Alternative

The Terrace Site Alternative would include construction of the DTR on a terraced grassy clearing on a hillside immediately north of the road that parallels the Crescent Harbor shoreline (Figure 2.1-2). The clearing is surrounded by mixed coniferous forest on three sides, and is open to the southwest overlooking Crescent Harbor and Saratoga Passage and Penn Cove in the distance (Figure 2.2-2). This site is approximately 1,450 ft (442 m) from Scenic Heights and 8,450 ft (2,576 m) from the Navy's Crescent Harbor Housing Complex. This alternative would require the same structure and security facilities (Figure 2.1-3) as the Polnell Point Alternative. The restricted area in Crescent Harbor would encompass the marine waters within the 1,075-ft (328 m) fragmentation arc. The residential areas located to the east of the NASWI perimeter fence are well outside of the fragmentation arc.

This site is located within a secured area of NASWI. The site and surrounding fields and forests are currently used for a variety of training activities, including survival and small unit combat tactics training. The terraced clearing itself was used in the past by a local community horseback riding club for recreational equestrian activities prior to closure by the Navy's Environmental Affairs office in 1995 due to environmental degradation. Only a small shed and bleachers remain from this former activity.

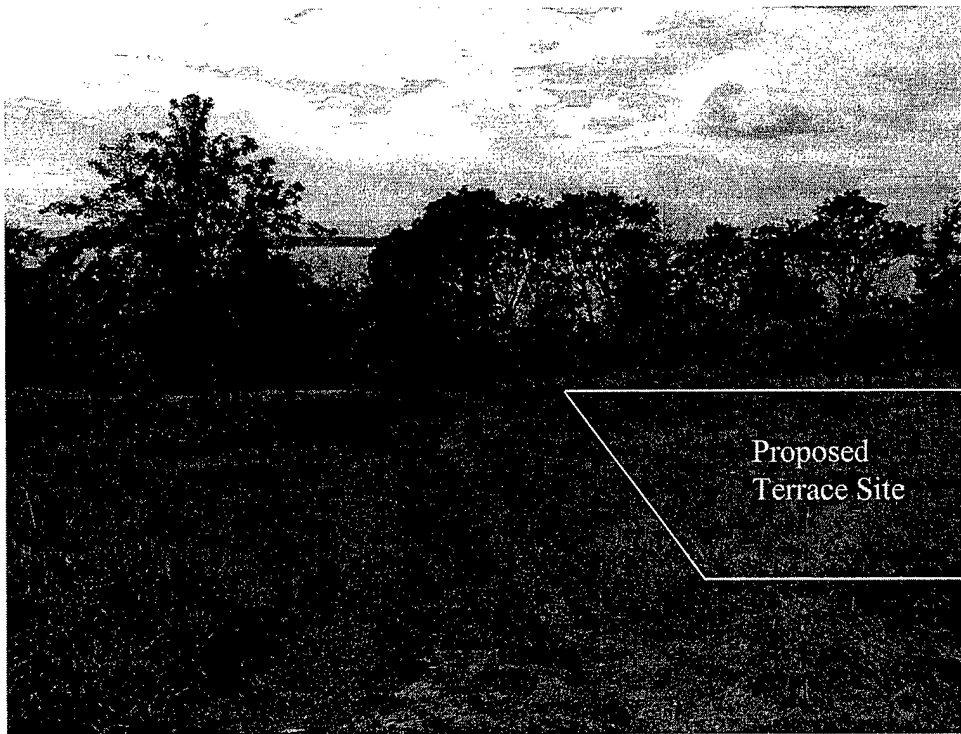


Figure 2.2-2. Existing conditions of the Terrace Site showing the approximate DTR location.

If this site is selected, all vegetation including groundcover within a 50-ft (15 m) radius of the detonation pit would be removed through regular site grading. A MILVAN would be placed at the site. Access to the Terrace Site would be controlled by the Navy's existing perimeter fence and additional security fencing installed around the clear zone. Observers would prohibit unauthorized public access during training exercises within the 1,075-ft (328 m) radius worst-case fragmentation arc of the detonation.

2.2.3 No Action Alternative

As required by NEPA, the No Action Alternative is considered in this EA. The No Action Alternative would result in no DTR being constructed at the Seaplane Base. The existing DTR would become inactive when the adjacent ammunition magazines 444 and 445 are reactivated. Under this alternative, the EODMU ELEVEN would be required to travel to conduct all of its detonation training at the YTC or other military installation.

Even under the No Action Alternative, the Navy will be establishing a Restricted Area in eastern Crescent Harbor through an ACOE permit. This restricted area is necessary for the ongoing underwater training activities conducted by EODMU ELEVEN.

The No Action Alternative would result in: (1) not meeting the mission readiness of EODMU ELEVEN personnel; and (2) substantially increased travel costs.

2.3 OPTIONS ELIMINATED FROM FURTHER ANALYSIS IN THE EA

Three additional sites at NASWI were initially considered but eliminated from further analysis in this EA due to ESQD requirements that restrict use of much of the base. These three sites include:

- A site located west of the Terrace Site that was evaluated in the 1993 EOD facility EA (Department of the Navy 1993);
- A site in the existing antenna field at the Seaplane Base; and
- Four other areas within the fenced magazine area on the Seaplane Base.

These options are assessed in Section 2.3.2 using evaluation criteria identified in Section 2.3.1.

In addition, the option of conducting EOD training at the Army's YTC or Boardman Bombing Range in Oregon was considered, but is not feasible due to the frequency of required training (at least monthly for each personnel). Such an option would substantially increase travel costs. In addition, these other facilities lack adequate ordnance storage.

2.3.1 Evaluation Criteria

Twelve criteria were used in this EA to assess EOD DTR siting options. These criteria are based primarily on the Navy's current purpose and need and include two types: exclusionary and evaluative. All exclusionary criteria must be met for an EOD DTR option to be considered as a NEPA alternative in this EA. Evaluative criteria for the EOD DTR options may be used to compare one NEPA alternative to another, but not to exclude an option. The more evaluative criteria that are met, the more favorable the option. Five exclusionary criteria and seven evaluative criteria are described below.

Exclusionary Criteria

- Meets EODMU ELEVEN training needs.
- Compatible with missions of all NASWI units.
- Consistency with the Draft Puget Sound Regional Shore Infrastructure Plan (Draft RSIP).
- Complies with Navy directives for no net loss of wetland habitat.
- Avoids significant impacts to the environment.

Evaluative Criteria

- Minimize distance between EOD DTR and existing Seaplane Base ordnance magazines.
- Minimize noise effects to nearby residents.

- Minimize cost of acquisition to the Navy.
- Minimize environmental effects.
- Minimize effects on the proposed Seaplane Base Historic District.
- Minimize impacts to recreation facilities.
- Minimize loss of open space.

2.3.2 Evaluation of Potential EOD Training Range Siting Options

The DTR options were evaluated using the three exclusionary and seven evaluative criteria previously listed. The results of this evaluation are summarized in Table 2.3-1. Options were evaluated against each criterion, with scores notated by the following: “yes,” “partial,” and “no.” Results of the evaluation are summarized below.

Option 1 - Constructing a new DTR at the Seaplane Base site identified in the 1993 EA: This option would result in a loss of at least 0.2 acre (0.1 ha) of wetland within the depression identified for potential development. This loss of wetland habitat would not be consistent with the Navy’s “no net loss” directive (Executive Order 11990). Greater costs incurred for engineering designs to reduce wetland impacts are not feasible. In comparison to the Terrace Site Alternative, this site is approximately 1,000 ft (305 m) farther from the residential areas of Scenic Heights but is closer to the Crescent Harbor Housing by about the same distance (Figure 2.1-2). Thus, potential noise effects would slightly decreased at Scenic Heights but increase at the Crescent Harbor Housing. In addition to loss of wetland, this option would result in a similar effect to wildlife from detonation noise as one of the Proposed Action alternatives. In summary, Option 1 does not meet all of the Navy’s exclusionary criteria and meets only three of the seven evaluative criteria (Table 2.3-1). Furthermore, it does not provide any significant benefit relative to the two Proposed Action alternatives. For these reasons, Option 1 was dropped from further detailed consideration as a NEPA alternative in this EA.

Option 2 - Constructing a new DTR at the antenna field at the Seaplane: This option would only be feasible if the Navy and U.S. Coast Guard (USCG) antenna fields could be relocated to another site. The relocation was considered by NASWI Command but was determined to be incompatible with the mission of the antenna fields. This option would result in less environmental impacts relative to the other options because it would be built in an already developed area, but would have generally similar noise impacts as the two Proposed Action alternatives. Therefore, Option 2 does not meet all of the Navy’s exclusionary criteria and meets only four of the seven evaluative criteria (Table 2.3-1).

Table 2.3-1: Evaluation of EOD DTR siting options at NASWI using exclusionary and evaluative criteria.

CRITERIA	EOD DTR SITING OPTIONS CONSIDERED				
	Option 1: Constructing a new DTR at the Seaplane Base site identified in the 1993 EA	Option 2: Constructing a new DTR at the antenna field at the Seaplane	Option 3: Constructing a new DTR in the fenced ordnance magazine area at the Seaplane Base (site undetermined)	Option 4: Constructing a new DTR at another location at the Seaplane Base (the Proposed Action)	
Exclusionary				4a: Polnell Point Site	4b: Terrace Site
Meets EODMU ELEVEN training needs	Yes	Yes	Yes	Yes	Yes
Compatible with ongoing mission of all NASWI units	Yes	No	No	Yes	Partial
Consistency with Draft Regional Shore Infrastructure Plan (RSIP)	Yes	Yes	Yes	Yes	Yes
Complies with no loss of wetland habitat policy	No	Yes	Yes	Yes	Yes
Avoids significant environmental impacts	No	Yes	Yes	No	Yes
Evaluative					
Minimize distance between DTR and existing Seaplane Base ordnance magazines	Yes	Yes	Yes	Yes	Yes
Minimize noise effects to nearby residents	No	No	No	Partial	Partial
Minimize cost of acquisition to the Navy	Yes	Yes	Yes	Yes	Yes
Minimize environmental effects	No	Partial	Yes	No	Partial
Minimize effects on the proposed Seaplane Base Historic District	Yes	Yes	Yes	Yes	Yes
Minimize impacts to recreation facilities	Partial	Partial	Yes	Partial	Partial
Minimize loss of open space	No	Yes	Yes	No	No
<i>Yes = Option meets the intent of the criterion; Partial = Option partially meets the intent of the criterion; No = Option does not meet the intent of the criterion.</i>					

Therefore, Option 2 does not meet the Navy's purpose and need and was dropped from further detailed consideration as a NEPA alternative in this EA.

Option 3 - Constructing a new DTR in the fenced ordnance magazine area at the Seaplane (site undetermined): NASWI considered the option of constructing the new DTR at another site within the fenced magazine area at the Seaplane Base. This would be a similar arrangement as what occurs with the existing DTR being near the magazines 444 and 445. This option would only be feasible if the new DTR would be outside of ESQD arcs. Such arcs extend from all active magazine bunkers. Once magazines 444 and 445 are re-activated, there will be no inactive magazines. Therefore, although this option could reduce environmental impacts, Option 3 was eliminated from further consideration in this EA as there are no locations available (Table 2.3-1). Option 3 does not meet the Navy's purpose and need and was dropped from further detailed consideration as a NEPA alternative in this EA.

Option 4 - Constructing a DTR at Another Location at the Seaplane Base (the Proposed Action): The two alternatives under this option would result in a new DTR that is located in a safe location near ordnance magazines, with minimized environmental impacts. The Polnell Point Site would result in higher peak noise levels at sensitive receptor sites and would be incompatible with bald eagle nesting. Siting the DTR at the Terrace Site would result in no significant environmental impacts. Impacts for each alternative are discussed in Chapter 3. Both alternatives would eliminate some open space but would at least partially meet the rest of the evaluative criteria and all of the Navy's exclusionary criteria (Table 2.3-1). Because the two alternatives of this option best meet the Navy's purpose and need, they are included for full consideration as Proposed Action alternatives in this EA.

2.4 ADDITIONAL STANDARD OPERATING PROCEDURES (SOP) REQUIREMENTS

The following items will be added to the Standard Operating Procedures (SOP) for non-emergency explosive ordnance disposal operations (EODMUELEVEN INSTRUCTION 3120.1D).

- The new DTR will be used following the meteorological conditions specified in Table 3.3-8. The new SOP will include a protocol for EOD personnel to contact NASWI meteorologists to confirm weather conditions at the beginning of each day's training. EOD personnel will utilize portable wind meters to detect any significant shifts in winds throughout each day's training and will suspend training if conditions become unacceptable. This information will be recorded in a log maintained by the EODMU ELEVEN.
- Limit detonations to non-holiday weekdays (7 a.m. to 10 p.m.) except for one weekend per month for EODMU SEVENTEEN training.

- Coordinate training schedules with organizers of major sporting events such as regattas and fishing derbies.
- Do not conduct demolition training when the haul-out rocks just offshore of the Terrace Site are occupied by marine mammals.
- Monitor and report any documented injury or disturbance to bald eagles and marine mammals to the NASWI Environmental Affairs Department.

2.5 SUMMARY OF ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES

2.5.1 Comparison of Proposed Action and No Action Alternative

These potential environmental effects and proposed mitigation measures are summarized below and in Table 2.4-1. The information presented in this section is based on the full analysis presented in Sections 3.0 and 4.0.

2.5.2 Proposed Mitigation Measures

Below is a complete listing of the proposed mitigation measures identified in this EA for the Proposed Action.

Land Use

There will be an unmitigated loss of open space; however, to ensure that future planning at NASWI considers the new EOD DTR, the following mitigation measure would be implemented:

- LU-1 The Navy will modify the NASWI Master Plan during the next update cycle to reflect the change in designated land use of the area within the fragmentation arcs at the proposed EOD training site from OS to TR, OP, or other appropriate land use designation.

To further ensure that no adverse impacts to the USCG's LORAN-C receiver site occur, the following mitigation measure could be implemented:

- LU-2 The Navy will consult with the USCG to accurately determine the likelihood of impacts to the LORAN-C receiver. If necessary, the Navy will work with the USCG to modify the DTR operation to prevent damage to the equipment, while still meeting the purpose and need of the Proposed Action.

Table 2.5-1: Summary of environmental effects and mitigation measures for the Proposed Action and the No Action Alternative.

AFFECTED ENVIRONMENT	PROPOSED ACTION		NO ACTION ALTERNATIVE
	A. POLNELL POINT	B. TERRACE SITE	
Land Use			
<i>Environmental Effects</i>	No significant effects. Loss of 0.2 acre (0.1 ha) of open space. This may lead to a change in land use from Open Space (OS) to Training (TR) or Operations (OP) or other appropriate land use designation. Project would be compatible with the Draft RSIP. Detonations could adversely impact boating use of Crescent Harbor.	Same as Alternative A	No significant effects. The No Action Alternative would not affect land use, other than to substitute one Naval mission support function (training) for another (storage), and thus would have no direct land use impacts at NASWI.
<i>Mitigation Measures</i>	LU-1 through LU-3 (see Section 3.1.3).	Same as Alternative A	None required.
Climate and Air Quality			
<i>Environmental Effects</i>	No significant effects. Small short-term emissions from detonations would dissipate before reaching residential areas.	No significant effects. Small short-term emissions from detonations would dissipate before reaching residential areas.	No effects at NASWI.
<i>Mitigation Measures</i>	CAQ-1 through CAQ-3 (see Section 3.2.3)	CAQ-1 through CAQ-3 (see Section 3.2.3)	None required.

Table 2.5-1: Summary of environmental effects and mitigation measures for the Proposed Action and the No Action Alternative.

AFFECTED ENVIRONMENT	PROPOSED ACTION		NO ACTION ALTERNATIVE
	A. POLNELL POINT	B. TERRACE SITE	
Noise			
<i>Environmental Effects</i>	Detonations have the potential to result in peak noise levels above 120 dBP in residential areas adjacent to NASWI. Limiting detonations to specific meteorological conditions would eliminate significant annoyance of public but would still result in noise levels in residential areas that are greater than under the Terrace Site Alternative. No structural or physiological damage will occur during favorable meteorological conditions.	Detonations have the potential to result in peak noise levels above 120 dBP in residential areas adjacent to NASWI. Limiting detonations to specific meteorological conditions would eliminate significant annoyance of public. No structural or physiological damage will occur.	The No Action alternative would terminate detonations of explosives, resulting in a minor reduction of noise levels in residential areas.
<i>Mitigation Measures</i>	N-1 through N-3 (see Section 3.3.3).	N-1 through N-3 (see Section 3.3.3).	None required.
Recreation Resources			
<i>Environmental Effects</i>	No land-based recreation effects would occur. Water-based recreation would be prohibited within the restricted area established in the eastern portion of Crescent Harbor during detonations.	No land-based recreation effects would occur. Water-based recreation would be prohibited within the restricted area established in the eastern portion of Crescent Harbor during detonations.	Under the No Action Alternative, recreational opportunities would remain unaffected. The restricted area in eastern Crescent Harbor would still be enforced during other waterborne EOD training activities.
<i>Mitigation Measures</i>	REC-1 and REC-2 (see Section 3.4.3).	REC-1 and REC-2 (see Section 3.4.3).	REC-1 and REC-2 (see Section 3.4.3).

Table 2.5-1: Summary of environmental effects and mitigation measures for the Proposed Action and the No Action Alternative.

AFFECTED ENVIRONMENT	PROPOSED ACTION		NO ACTION ALTERNATIVE
	A. POLNELL POINT	B. TERRACE SITE	
Historical and Cultural Resources			
Environmental Effects	Development and use of Polnell Point for an EOD DTR would require grading of a road across the isthmus to the training range site, through a culturally sensitive area and could disturb buried archaeological resources. No effects to the Historic Resources would occur.	Development and use of the Terrace Site for an EOD DTR would require grading within a culturally sensitive area and could disturb buried archaeological resources. Because the Terrace Site is already actively used by Navy personnel, impacts are less likely than at the Polnell Point Site. No effects to the Historic Resources would occur.	No effects at NASWI.
Mitigation Measures	HCR-1 and HCR-2 (see Section 3.5.3).	HCR-1 and HCR-2 (see Section 3.5.3).	None required.
Aesthetic/Visual Resources			
Environmental Effects	Construction of the DTR on Polnell Point would alter the aesthetic quality of the shoreline for residents of Polnell Shores and Scenic Heights by the replacement of vegetation with the DTR structure. Operation would result in short-term visual impacts from small detonation plumes. Neither impact are considered significant.	No significant visual impacts.	No impacts at NASWI.
Mitigation Measures	None required.	None required.	None required.

Table 2.5-1: Summary of environmental effects and mitigation measures for the Proposed Action and the No Action Alternative.

AFFECTED ENVIRONMENT	PROPOSED ACTION		NO ACTION ALTERNATIVE
	A. POLNELL POINT	B. TERRACE SITE	
Geology and Soils			
<i>Environmental Effects</i>	Construction of the DTR on Polnell Point would temporarily disturb soils in the 0.2-acre (0.1-ha) DTR site and along the isthmus road. No long-term soil impacts are anticipated.	Construction of the DTR on Polnell Point would temporarily disturb soils in the 0.2-acre (0.1-ha) DTR site. No long-term soil impacts are anticipated.	No impacts at NASWI.
<i>Mitigation Measures</i>	GS-1 through GS-3 (see Section 3.7.3).	GS-1 through GS-3 (see Section 3.7.3).	None required.
Hydrology and Water Quality			
<i>Environmental Effects</i>	Construction could result in short-term increases in sediment entering Crescent Harbor. No significant or long-term effects to water resources are anticipated.	Construction is not likely to increase sediment entering Crescent Harbor. No significant or long-term effects to water resources are anticipated.	No impacts at NASWI.
<i>Mitigation Measures</i>	GS-1 through GS-3 (see Section 3.7.3). The Navy will also acquire a Coastal Zone Consistency Determination.	GS-1 through GS-3 (see Section 3.7.3). The Navy will also acquire a Coastal Zone Consistency Determination.	None required.
Vegetation, Fish, and Wildlife Resources / T&E Species			
<i>Environmental Effects</i>	Construction and operation of the DTR at Polnell Point would directly disturb nesting bald eagles and could result in a "take" of a threatened species. Operation could disturb harbor seals, a species protected under the MMPA.	Construction and operation of the DTR at the Terrace Site would cause temporary disturbance to wildlife. Effects to threatened and endangered species would be limited to short-term disturbance of eagles perching along the eastern Crescent Harbor coast and harbor seals hauled out on "Haul-out Rock".	No impacts at NASWI.

Table 2.5-1: Summary of environmental effects and mitigation measures for the Proposed Action and the No Action Alternative.

AFFECTED ENVIRONMENT	PROPOSED ACTION		NO ACTION ALTERNATIVE
	A. POLNELL POINT	B. TERRACE SITE	
<i>Mitigation Measures</i>	No mitigations were identified that would adequately eliminate or reduce the impacts to bald eagles from the Polnell Point alternative	VWR-1 through VWR-4 (see Section 3.9.3).	None required.
Environmental Health Hazards			
<i>Environmental Effects</i>	No adverse effects are anticipated outside of the increased noise levels in residential areas.	No adverse effects are anticipated outside of the increased noise levels in residential areas.	No impacts at NASWI.
<i>Mitigation Measures</i>	N-1 through N-3 (see Section 3.3.3).	N-1 through N-3 (see Section 3.3.3).	None required.
Environmental Justice			
<i>Environmental Effects</i>	No adverse effects are anticipated. Distribution of the EA FONSI is required.	No adverse effects are anticipated. Distribution of the EA FONSI is required.	No impacts at NASWI.
<i>Mitigation Measures</i>	EJ-1 (see Section 3.11.3).	EJ-1 (see Section 3.11.3).	None required.

To ensure that the Proposed Action is consistent with the Washington Coastal Zone Management Plan (CZMP) and the City of Oak Harbor's Shoreline Master Program, the following mitigation measure would be implemented:

- LU-3 The Navy will acquire a Coastal Zone Consistency Determination in compliance with the Washington CZMP and will provide advanced written notification to the director of the City of Oak Harbor Department of Planning and Community Development of planned activity within the Shoreline Management Zone.

Air Quality

By implementing the following three mitigation measures as part of the Proposed Action, there would be no adverse effects to climate or air quality from either action alternative:

- CAQ-1 Construction activities associated with the Proposed Action will comply with Northwest Air Pollution Authority (NWAPA) Regulations, Section 550, Preventing Particulate Matter From Becoming Airborne. The following measures have been developed in consultation with the NWAPA for the control of fugitive dust generated during construction (NWAPA 1994; ROC, Mahar, 1998):

- During all land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities, fugitive dust emissions will be effectively controlled by watering or soaking;
- All disturbed areas, including storage piles, that are not being actively utilized for construction purposes will be effectively stabilized of dust emissions by applying water, chemical stabilizers/suppressant, or vegetative ground cover;
- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles will be effectively stabilized of fugitive dust emissions by utilizing sufficient water or chemical stabilizer/suppressant;
- Vegetation outside of the clear zone will be replanted in disturbed areas as quickly as possible; and
- Ground-disturbing activities will be suspended during high wind conditions (25 mph [40 km/hr] or greater).

- CAQ-2 By detonating explosives only under favorable conditions, atmospheric dilution of the released pollutants would be maximized, thus ensuring that no adverse impacts occur in the nearby residential areas. These favorable conditions are defined as follows:

- Clear skies with billowy cloud formations,
- During warm periods of the day, and

- Under a rising atmospheric pressure.

No detonations would be allowed under atmospheric conditions that lead to inversions such as:

- Clear days when layering of smoke or fog are observed,
- Cold hazy or foggy mornings,
- Generally high barometer readings with low temperatures.

CAQ-3 A NWAPA permit will be updated to reflect the new DTR and burn box location.

Noise

No significant construction noise impacts are anticipated from the proposed project. Therefore, no construction noise mitigation is proposed.

Modeling indicates that increasing the explosives from 0.5 to 5.0 lbs (0.2 to 2.3 kg) NEW explosives would create potentially significant impacts to nearby residents. The Terrace Site provides a greater opportunity for utilizing 5-lb (2.3 kg) explosives. Therefore, a detailed set of mitigation measures was developed for that alternative. Operation noise impacts can be minimized by implementing the mitigation measures summarized below.

- N-1 To greatly reduce the potential for noise complaints and to eliminate the potential for damage, detonations should only be conducted during specific meteorological conditions that take into account the temperature gradient, wind direction and speed, and amount of explosive to be detonated. As part of this noise mitigation measure, detonations at the DTR at the Terrace Site will establish a new Standard Operating Procedure (SOP) that takes into account the meteorological conditions specified in Table 2.5-2. The new SOP would include a protocol for EOD personnel to contact NASWI meteorologists to confirm weather conditions at the beginning of each day's training. EOD personnel will utilize portable wind meters to detect any significant shifts in winds throughout each day's training and will suspend training if conditions become unacceptable. This information will be recorded in a log maintained by the EODMU ELEVEN.
- N-2 Information and education of residents affected by high noise levels can help increase residents' understanding and acceptance of noise levels. These programs could include:
- Warn nearby residents of potential detonations, especially at the beginning of the range use. Discuss the expected frequency of occurrence of detonations as well as what the residents may expect to experience (e.g., rattling of windows). This may be conducted by way of an "open house" or public meeting.

- Conduct a test detonation with noise monitoring at which the residents are invited to attend. Have someone on hand to discuss the measured noise levels and what they might mean.
- If possible, give warnings to nearby residents when periods of frequent detonation activity may occur through distribution of notices (e.g., mail or newspapers).

N-3 NASWI personnel will receive and monitor any noise complaints received from the public. If necessary, NASWI personnel will conduct additional noise level monitoring during DTR operation to document actual noise levels off of NASWI property. Results of the monitoring could be used to modify the restrictions presented in Table 2.4-2 to address any significant noise problems.

Table 2.5-2. Net Explosive Weight (NEW) allowable at the Terrace Site Alternative under various meteorological conditions to limit off-station noise levels to < 120 dBP.^{1,2}

General Conditions	Wind Speed/Direction ³	Net Explosive Weight (NEW) Permitted
Sunny spring and summer days April—September (1000—1600 hrs)	≥ 16.8 mph (7.5 m/sec)—50°--160°, or ≥ 11.2 mph (5 m/sec)—45°--145°, or ≥ 6.7 mph (3 m/sec)—70°--125°	Up to 5 lbs (2.3 kg)
Sunny spring and summer days April—September (0800—2200 hrs)	≥ 16.8 mph (7.5 m/sec)—45°--170°, or ≥ 11.2 mph (5 m/sec)—45°--160°, or ≥ 6.7 mph (3 m/sec)—45°--150°, or ≥ 4.5 mph (2 m/sec)—35°--135°	Up to 3 lbs (1.4 kg)
Cloudy spring or summer days (mostly cumulus, no stratoform clouds below 3000 ft) or fall and winter days with no clouds or mostly cumulus clouds	≥ 16.8 mph (7.5 m/sec)—25°--180°, or ≥ 6.7 mph (3 m/sec)—15°--180°, or ≥ 4.5 mph (2 m/sec)—5°--180°, or < 4.5 mph (2 m/sec)—0°--200°	Up to 1 lb (0.4 kg)
Cloudy winter or fall days with stratoform clouds where no "broken" or "overcast" layers are reported below 3,000 ft.	≥ 16.8 mph (7.5 m/sec)—15°--190°, or ≥ 11.2 mph (5 m/sec)—5°--170°, or ≥ 6.7 mph (3 m/sec)—340°--205°, or ≥ 4.5 mph (2 m/sec)—295°--205°, or < 4.5 mph (2 m/sec)—0°--360°	Up to 0.5 lb (0.2 kg)

¹ 120 dBP is threshold of increasing risk of receiving noise complaints from public.
² An overriding condition for detonation of any NEW is that no temperature inversion exists below 5,000 ft.
³ Wind directions are expressed in degrees from magnetic north.

Recreation

To minimize adverse effects on recreational opportunities and increase public safety:

- REC-1 EODMU ELEVEN will limit detonations to non-holiday weekdays (7 a.m. to 10 p.m.) except for one weekend per month for EODMU SEVENTEEN training.
- REC-2 EODMU ELEVEN will coordinate training schedules with organizers of major sporting events such as regattas and fishing derbies.

Cultural Resources

The mitigation procedures for historic resources listed below are further defined in Section 5.4 of the Integrated Cultural Resources Management Plan (ICRMP) for Naval Station Whidbey Island (Department of the Navy 1999b). The ICRMP contains Standard Operating Procedures for protection of historic and archeological resources potentially encountered during construction or operation of the Proposed Action.

HCR-1 Construction activities within archaeological sensitive areas should be monitored by a qualified archaeologist.

HCR-2 In the case of the discovery of archeological evidence of previous human occupation (including the discovery of human remains) during construction or any other activity, the Navy will follow these procedures:

- Stop work in area of discovery and protect discovery from potential damage. Any human remains should be left undisturbed to ensure consistency with NAGPRA.
- Notify the National Park Service, Department Consulting Archeologist (DCA), at (907) 257-2436. The DCA will, in most situations, arrange for a local professional archeologist to visit the site, usually within 48 hours of notification, to make a determination of whether the discovered material is significant. Notification of the SHPO by phone at this time is also recommended. If the DCA's representative determines that the discovery has no significant archeological value (i.e., it is not likely to yield information important in prehistory or history), the SHPO must be notified in writing and given 30 days to comment. Upon receipt of SHPO concurrence, work in the area may proceed.
- If the DCA's representative determines that the discovered archeological resource is significant (i.e., it is likely to yield information important in prehistory or history of the area), the DCA will consult with the Navy and the SHPO to determine appropriate treatment for the discovered resources. The Secretary of the Interior is authorized to pay data recovery and project delay costs by the Archeological and Historic (Data) Preservation Act of 1974, but funds appropriated for this purpose may be insufficient and project funds may have to be used. Project funding for archeological data recovery (if total project cost is over \$50,000) is limited to 1 percent of the total project funding authorization. Additional expenditures require the concurrence of the Secretary of Interior and notification of the Committee on Interior and Insular Affairs of the House of Representatives and the Senate Committee on Energy and Natural Resources.
- Prior to beginning the data recovery work, notify the SHPO of the discovery, its significance, and planned data recovery work and allow the SHPO 30 days to comment. The SHPO should also be involved in the discussions with the DCA.

Upon completion of data recovery work, the Navy or other owner should provide the Advisory Council on Historic Preservation (ACHP) with a report on the work.

Visual/Aesthetic Resources

The Proposed Action would result in no adverse visual impacts. Therefore, no mitigation measures are proposed.

Geology and Soils

By implementing the following mitigation measures, there would be no adverse effects on geology and soils from construction of either alternative of the Proposed Action:

- GS-1 The Navy contractor will minimize the risk of soil contamination during construction by restricting fueling and equipment maintenance to a designated staging area with an impermeable surface and a spill containment and clean-up kit.
- GS-2 The Navy contractor will implement BMPs, as defined by WDOE and Island County and outlined in the NASWI Integrated Natural Resources Management Plan (INRMP) (Department of the Navy 1996a), to minimize erosion and disturbance during construction.
- GS-3 The Navy contractor will follow the standard vegetation planting practices listed in the INRMP.

Hydrology and Water Quality

The Navy will implement mitigation measures GS-1 through GS-3 (see above) to minimize potential effects to hydrology and water quality.

Vegetation, Fish, and Wildlife Resources

Under the Polnell Point Alternative, no mitigation measures would adequately minimize impacts to bald eagles. Potential impacts resulting from relocating the DTR to the Terrace Site would be minimized by implementing the following mitigation measures:

- VWR-1 The area disturbed during construction will be minimized, all trees outside of the 50-ft (15 m) radius clear zone will be maintained, and temporarily disturbed surface areas will be revegetated with native plant species beneficial for wildlife following guidelines in the INRMP.
- VWR-2 During construction and operation activities, the Navy will monitor bald eagle behavior and reproductive success at the Seaplane Base in coordination with the

U.S. Fish and Wildlife Service (USFWS) and Washington Department of Fish and Wildlife (WDFW).

VWR-3 DTR standard operations would include wildlife monitoring and reporting to agencies including the National Marine Fisheries Service (NMFS), WDFW, and USFWS. This monitoring will be supervised by the NASWI Environmental Affairs Department.

VWR-4 Demolition training will not occur when marine mammals are present on the "Haul-out Rocks" located just offshore from the Terrace Site.

Impacts to nesting bald eagles could be eliminated if detonations were limited to the August 16 to December 31 time period. However, this would not be compatible with the training requirements of the EODMU ELEVEN.

Mitigation of construction effects on vegetation and wildlife resources will also be accomplished by implementation of mitigation measures GS-1 through GS-3 (see above).

Environmental Health Hazards

Mitigation measures N-1 through N-3 (see above) would be implemented by NASWI as part of the Navy's compliance with Executive Order 13045 and NEPA to minimize noise levels experienced by the public, thus protecting the public against environmental health hazards.

Environmental Justice

By implementing the following mitigation measure, the Navy would comply with Executive Order 12898 and NEPA:

EJ-1 The Navy will distribute this EA in compliance with Executive Order 12898 and NEPA to the Swinomish and Samish Tribes to ensure that these minority groups receive adequate information concerning the Proposed Action. Requests from any minority or ethnic groups or organizations for information and/or copies of this EA will be met in a timely manner by the Navy.

2.6 FONSI OR EIS RECOMMENDATION

The conclusion of this EA is that the Terrace Site Alternative represents the environmentally preferred alternative. The Polnell Point Alternative would significantly affect bald eagles, a species protected by the Endangered Species Act (ESA), and would increase the likelihood of significant noise levels in residential areas to the east of the Seaplane Base.

A Finding of No Significant Impact (FONSI) is justified for the environmentally preferred alternative and is hereby recommended. The preparation of an Environmental Impact

Statement (EIS) by the Navy is not recommended or warranted because all impacts of the Proposed Action will be mitigated below a level of significance.

3.0 AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION MEASURES

Section 3.0 discusses the affected environment, environmental consequences, and proposed mitigation measures for effects associated with alternatives under consideration in this EA, by resource area. Potential effects were analyzed for both the Proposed Action (relocation and operation of an explosive ordnance disposal detonation training range at the Seaplane Base) and the No Action Alternative (cessation of explosive ordnance training at NASWI). Each resource topic is discussed below. Environmental resource topics found to have minor, negligible, or no effects are discussed at the end of this section and include wetlands, socioeconomics, public services, schools, and utilities.

3.1 LAND USE

This section addresses compatibility with local land use patterns and consistency with applicable land use plans and regulations.

3.1.1 Affected Environment

The two proposed alternative explosive ordnance disposal detonation training range sites are located within the boundaries of Naval Station Whidbey Island in Township 32 N, Range 2 E, Section 4 within Island County, as shown on Figure 2.1-1. The Polnell Point Site is located along the western edge of Polnell Point, a narrow headland directly east of Crescent Harbor, approximately 1.5 miles (2.4 km) south of the existing DTR. The Terrace Site is located in a terraced clearing on a forested hillside located near the eastern edge of the grassy slope rising up from Crescent Harbor bluff top, approximately 0.8 mile (1.3 km) south southeast from the existing DTR.

3.1.1.1 Polnell Point Alternative

Polnell Point is a narrow peninsula projecting southward into Saratoga Passage. The peninsula is approximately 3,300 ft (1,006 m) long and 700 ft (213 m) wide, measuring approximately 28 acres (11 ha). Its highest point rises approximately 123 ft (37 m) above mean high water level (MHWL). At the northern end, the peninsula slopes gently down to the beach where it connects to the mainland via a narrow isthmus. The rest of the peninsula is bounded by eroding high-bank bluffs, which are steepest at the southwestern corner of the peninsula. At low tide, the entire point is surrounded by a rocky beach. At high tide, it is practically an island as only a low-lying narrow causeway is exposed. The high water mark approaches the foot of the bluffs in numerous locations. Most of the center of the peninsula is forested with mature, structurally complex mid-successional forest cover (Department of the Navy 1996a). A small area on the northwest edge of the peninsula is covered by shrubs and grass.

Polnell Point is not currently being used by the Navy except for periodic EOD retrieval exercises. An unmanned navigation light (LLNR 18750) maintained by the USCG at the southern end of Polnell Point was recently decommissioned. An unpaved and overgrown road traverses the length of the peninsula. This road is just a few feet above MHWL on the isthmus. The proposed EOD DTR site is located on a gently sloping bench bordering Crescent Harbor about 10 ft (3 m) above MHWL. This site was used in the past for EOD training and is reputed to contain unexploded ordnance, but is not currently being used. In conjunction with the Washington Department of Fish and Wildlife (WDFW), the Navy has designated all of Polnell Point as a bald eagle management area with access restricted by a gate at the north end of the isthmus (Department of the Navy 1996b).

3.1.1.2 Terrace Site Alternative

The site is a clearing on a terraced slope measuring approximately 300 ft (91 m) by 450 ft (137 m). The site has been graded into four grass-covered nearly level terraces. The clearing has a south-southwest view of Saratoga Passage and Coupeville. The site is accessed from East Pioneer Way, an unimproved road that runs parallel to the Crescent Harbor shoreline along the top of the bluff. The bank rises approximately 100 ft (30 m), serving as a significant barrier to public access to the site from the beach. The nearest realistic access to the site from the beach is nearly one mile (1.6 km) southeast near Polnell Point. The Terrace Site was formerly used by a local horseback riding club that leased 17 acres (7 ha) of land in the vicinity for equestrian activities from 1974 until 1995 when its lease was not renewed (ROC, Melaas, 11/4/99).

3.1.1.3 Surrounding Environment

Background - Land Use Regulations/Information

Both sites are within the boundaries of the Seaplane Base, which serves as a support installation for NASWI. The Seaplane Base totals 2,795 acres (1,131 ha) of which 1,750 acres (708 ha) are undeveloped including forest or acreage leased for agriculture. Development on the Seaplane Base consists mostly of housing, Naval support services, ordnance storage, and training areas. Naval development is concentrated in four locations: Crescent Harbor housing located north of the central portion of Crescent Harbor; Capehart Officer housing on the Maylor and Forbes Point peninsula; the Naval Exchange/Commissary complex on the isthmus between Oak and Crescent Harbors; and Saratoga Heights, Rockhill Terrace, and Victory Homes directly to the north of the isthmus. The Navy's wastewater treatment lagoon is located in a marshy area northwest of Crescent Harbor. The Base's 10.1 miles (16.3 km) of shoreline extend from the east side of Polnell Point along the entire length of Crescent Harbor to Oak Harbor.

Crescent Harbor itself is a shallow bay bounded to the east by Polnell Point and Maylor Point to the west. The bay is the site of limited commercial fishing and crabbing operations, as well as recreational boating. Farther offshore to the south is Saratoga Passage, which separates Whidbey Island from Camano Island. Skagit Bay is to the east and Penn Cove lies to the south. The nearest landfall other than Whidbey Island is Rocky Point on the northern tip of Camano Island 2 miles (3.2 km) to the southeast.

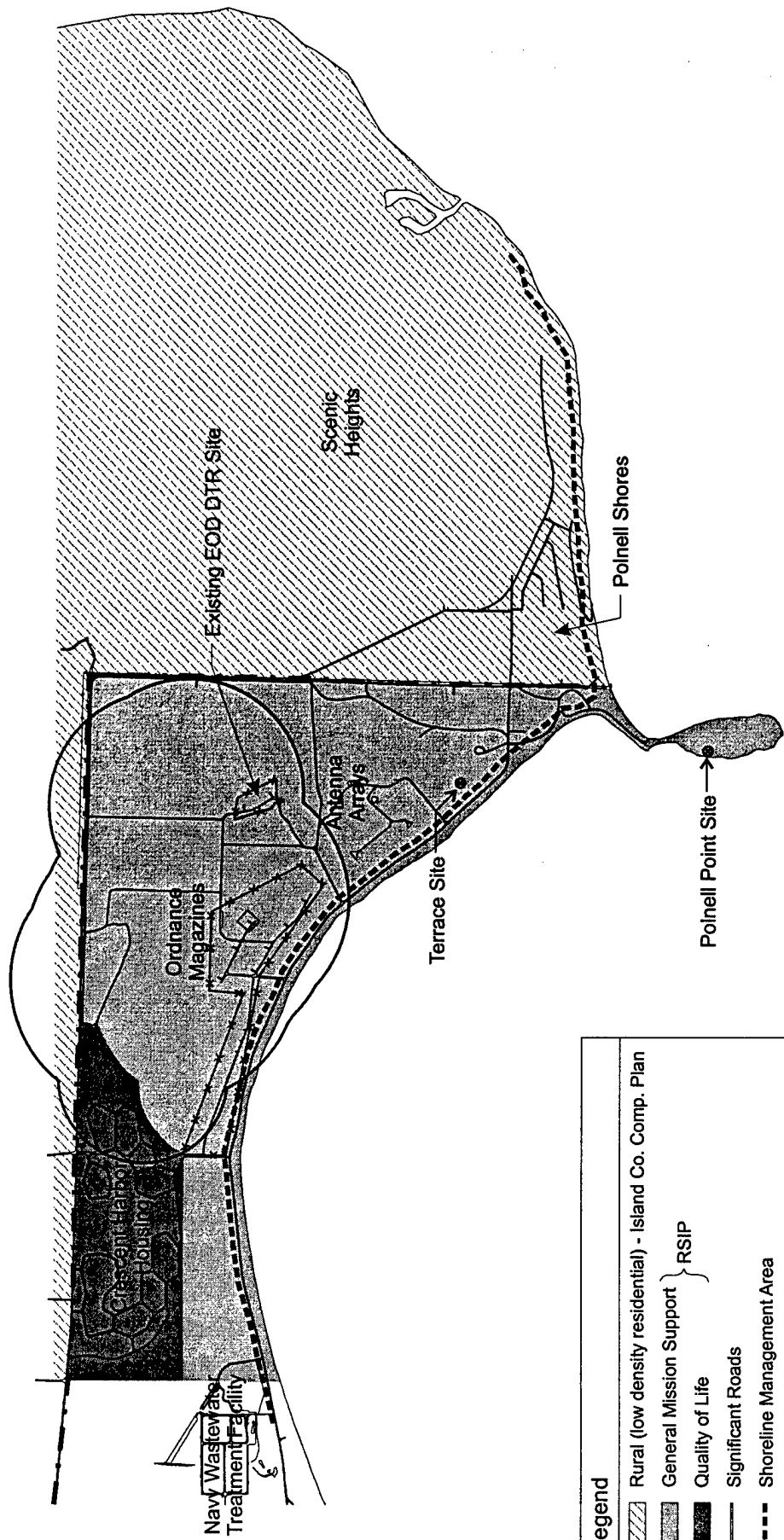
For the last decade, planning and development at NASWI have been guided by the 1988 NASWI Master Plan Update (Department of the Navy 1988). The Master Plan Update designated land use in the vicinity of the Proposed Action alternative sites as Open Space (OS).

Beginning in 1999, land use by the Navy at NASWI must be consistent with the Regional Shore Infrastructure Plan (RSIP) (Department of the Navy 1999a). RSIP is a new regional planning effort applicable to all regional Naval shore facilities under the command of the Commanding Officer, Naval Station Seattle. RSIP is intended to identify appropriate land uses at each installation on a region-wide basis. RSIP recommendations will eventually be

incorporated into each base master plan in the Puget Sound Region. The RSIP designates both proposed sites as General Mission Support, as presented in Figure 3.1-1. This includes functions that support the operations functions and need to be within reasonable siting distance to support operational efficiencies, yet do not have a requirement for immediate adjacency. These include functions that indirectly support community services and Bachelor Quarter (BQ) housing functions. Conditional uses for specific administrative and storage facilities in direct support of waterfront activities are also included (Department of the Navy 1999a).

The City of Oak Harbor's jurisdictional boundaries include the Seaplane Base; however, with the exception of shoreline authority as authorized by the State of Washington Shoreline Management Act (WAC 173-27-060), the City does not have land use authority over federal property. All construction activity occurring within designated shoreline zones (200 ft [61 m] from MHWL) must comply with the City of Oak Harbor's Shoreline Management Master Program (SMMP) (City of Oak Harbor 1998a), Oak Harbor Municipal Code 19.56.015, to the maximum extent possible. Federally owned land is exempt from the SMMP but must be consistent with the federal Coastal Zone Management Plan (CZMP). The Polnell Point Site is definitely within the 200-ft (61 m) zone while the Terrace Site is very near the 200-ft (61 m) boundary of the shoreline zone. The Shoreline Management Master Program also designates the Crescent Harbor shoreline seaward of the low tide line as a shoreline of statewide significance.

Land adjacent to the eastern boundary of the Seaplane Base is outside the city limits in unincorporated Island County. The County has classified these lands as rural and has zoned these areas accordingly, permitting residential densities at 1 dwelling unit per 5 acres (2 ha). The nearest civilian housing to the EOD DTR sites is a residential subdivision approximately 0.4 mile (0.6 km) away that contains less than 100 single-family homes. This area pre-dates both the current and previous Island County Comprehensive Plans, which designate this unincorporated rurally designated/zoned part of the county for lower densities. Most of the homes were built in the 1970s and 1980s, although new homes are continuing to be built. This area was subdivided in the 1970s as Polnell Shores and Passage Point, both part of a larger neighborhood commonly referred to as Scenic Heights. Homes line several paved streets on lots averaging 0.3 acre (0.1 ha) or larger. Many of these homes are oriented to the south to take advantage of panoramic views of Saratoga Passage in the distance and Polnell Point and the beach in the foreground. Land uses on the northern tip of Camano Island mimic those around Scenic Heights, including mostly rural and rural residential. The Maylor/Forbes Point Peninsula at the Seaplane Base is also predominantly residential, containing 240 units of housing for both enlisted and officer personnel and the future Navy Lodge (ROC, Sankey, 11/22/99).



Legend	
	Rural (low density residential) - Island Co. Comp. Plan
	General Mission Support } RSIP
	Quality of Life
	Significant Roads
	Shoreline Management Area
	NASWI Boundary (Fenced)
	Ordnance Safety Arcs ESQD
	Proposed Alternative EOD DTR Sites
	Fence

Source: Department of the Navy 1999a

Environmental Assessment
EOD Detonation Training Range
Seaplane Base, NASWI

Generalized Land Use

Figure 3.1-1

Existing Land Use

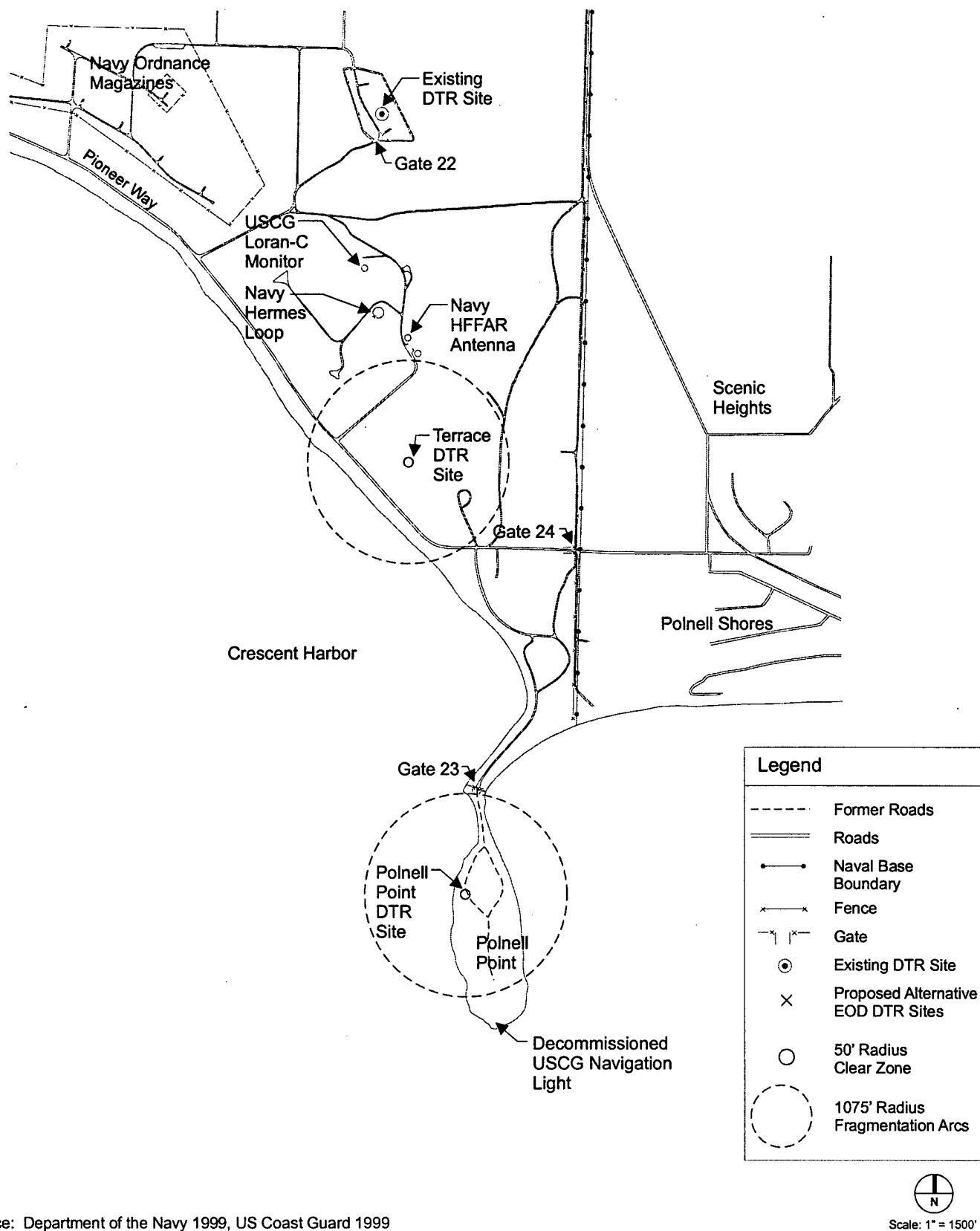
Human activity in the vicinity of the proposed EOD DTR sites is restricted by the Navy and is officially limited to military personnel or civilians by special permission when the site is not being used for training. Naval activity includes survival training in a forested hillside in the northeastern corner of the base, antenna maintenance, and ordnance loading. The entire eastern portion of the Seaplane Base from the ordnance magazine fence to Polnell Point is used for training by a variety of military units. Training by small groups of up to 50 participants occurs from 8 to 10 times per year on average, while larger groups of up to several hundred use the area for training exercises an average of 4 times each year. Most training is for small unit combat tactics such as perimeter security and land navigation. Limited pyrotechnics and weapons up to 50 caliber are fired with blank ammunition (ROC, Melaas, 11/4/99). Recreational activity by civilians and Naval personnel also occurs in this area of the Seaplane Base and is addressed in Section 3.4 of this document.

The nearest Naval housing complex to the proposed EOD DTR sites is the Crescent Harbor housing complex consisting of 389 units of enlisted family housing and an elementary school (ROC, Sankey, 11/5/99). The Crescent Harbor housing is located approximately 1.5 miles (2.4 km) northwest of the Terrace Site and 2.5 miles (4 km) northwest of the Polnell Point Site.

The station's main ordnance magazines are located between the proposed Terrace Site and the Crescent Harbor housing complex (Figure 3.1-1). These underground concrete bunkers are used for storing explosive munitions and are accessed by Naval personnel periodically. ESQD arcs encircle each magazine, encompassing the majority of the eastern part of the Seaplane Base.

Two arrays of receiving antenna are located between the ordnance bunkers and the Terrace Site (Figure 3.1-2). One belongs to the Navy, which also operates passive receivers in nearby Building 986. The arrays are 2,060 ft (628 m) from the existing DTR and 1,310 ft and 6,000 ft (399 m and 1,829 m) from the proposed Terrace Site and Polnell Point Site, respectively. These facilities are accessed approximately twice weekly on average by Naval personnel performing maintenance functions. Activity increases significantly when troubleshooting or major repairs are required on an occasional basis (ROC, Perreault, 11/4/99). The other array belongs to the USCG. This antenna array monitors low frequency LORAN-C broadcasts for much of the west coast, including Alaska (ROC, Deitrich, 11/23/99). The USCG array is approximately 1,680 ft (512 m) from the existing DTR and 2,060 ft (628 m) from the Terrace Site. The LORAN-C unit does contain glass vacuum tubes (ROC, McMillan, 1/13/00). The USCG and telephone companies access this antenna for maintenance and repairs on a quarterly basis (ROC, Fuentes, 11/5/99).

The USCG has operated a navigation light atop the cliff on the southern end of Polnell Point (LLNR 18750) for many years. The USCG recently decommissioned the Point Polnell Light because "the light is no longer considered necessary for safe navigation" (USCG 1999).



Environmental Assessment
for EOD Detonation Training Range
Seaplane Base, NASWI

Proximity to Antenna Arrays

Figure 3.1-2

3.1.2 Environmental Consequences

3.1.2.1 Proposed Action

Either site would require approximately 0.2 acre (0.1 ha) of relatively flat land cleared of all vegetation surrounded by an additional 450-ft (137 m) radius for training. Either site would include a total of approximately 261 acres (106 ha), within a worst-case detonation fragmentation arc with a 1,075-ft (328 m) radius (ROC, Petersen, 11/5/99).

The following sections discuss the construction and operation land use impacts from the two Proposed Action alternatives.

Construction Impacts

Neither site would require construction activity sufficient to affect land use directly. A shoreline substantial development permit would not likely be required since the proposal is a federal action and includes no major development (ROC, Burdette, 10/28/99). In accordance with Washington's CZMP, however, a Coastal Zone Consistency Determination is needed.

Polnell Point Alternative

A former road traversing the isthmus would also be rebuilt. In addition to eliminating open space immediately at the DTR site, the Polnell Point Alternative would eliminate 2,000 ft (610 m) of isthmus. Clearing and road construction activities are expected to be brief and have only limited short-term construction-related land use impacts.

Terrace Site Alternative

Other than the loss of open space, no construction-related land use impacts are anticipated from proposed development of this site.

Operational Impacts

The Proposed Action is generally consistent with the General Mission Support land use designation of the 1999 RSIP (Department of the Navy 1999a). Training with live explosives is a potentially risky and noisy activity with very specific location requirements. This activity needs to be physically separated from all other activities. These uses are similar to and compatible with other training activities.

As required by Navy regulations (NAVSEA OP 5 Volume 1, Sixth Revision), either site is located more than the required 500 ft (152 m) from any other occupied land use. Nonetheless, both sites are slightly closer than the existing EOD DTR site to civilian housing located at Scenic Heights and closer to the Crescent Harbor shoreline. By implementing noise mitigating measures (see Section 3.3), no noise levels above approximately 120 decibels, unweighted peak (dBP) would occur. Thus, the Proposed

Action would be compatible with civilian residential uses. Noise impacts are discussed in Section 3.3 of this EA.

Explosive ordnance disposal and training at either location would be inconsistent with the 1988 NASWI Master Plan Update's Open Space designation. Rather, such activities would be classified as Training (TR) or possibly Operations (OP) by the NASWI Master Plan Update. The 1999 RSIP classifies this part of the Seaplane Base as General Mission Support, which would include activities such as ordnance disposal and training; thus, the Proposed Action complies with the RSIP land use designation (Department of the Navy 1999a).

All activity occurring within designated shoreline zones must comply with the City of Oak Harbor's Shoreline Master Program. The Navy is required by the State Shoreline Management Act (WAC 173-27-060) to request that the Oak Harbor Department of Planning and Community Development review the proposal and respond to the Navy in writing regarding consistency with the City of Oak Harbor's Shoreline Master Program.

Under either alternative, the Navy will seek official designation of the area in the eastern portion of Crescent Harbor, including areas within the worst-case fragmentation arcs, as a Restricted Area by permit from the ACOE (ROC, Conlow, 11/5/99). This would notify the public of access restrictions to either site through the USCG's official "Notice to Mariners" and on future National Oceanic and Atmospheric Administration (NOAA) navigational charts. The restricted area is being established to include all marine waters used by the Navy for EOD training exercises, not just the Proposed Action addressed in this EA.

Polnell Point Alternative

The proposed Polnell Point Site is approximately 2,300 ft (701 m) from the nearest civilian residence at Polnell Shores, but most of this distance is over open water with no visual or acoustical barriers. DTR operation could adversely affect nearby homes on Polnell Shores, Passage Point, and other parts of the Scenic Heights neighborhoods within visual and hearing range of the proposed site. Although well outside the fragmentation arcs, nearby residents would still be subject to noise from the detonations (see Section 3.3). The peak noise levels, however, would be compatible with residential land uses at Polnell Shores and Scenic Heights. Visually, explosive detonations on the peninsula might appear to be in the "front yard" of private residents in the area (Section 3.6 addresses aesthetic and visual resources). As a result, the Navy might expect significant public opposition to detonations taking place on such a prominent location as Polnell Point.

DTR operation could adversely affect boating use on both sides of the Polnell Point peninsula. Commercial fishing and crabbing would be prohibited from the proposed restricted area in the eastern portion of Crescent Harbor. Recreation impacts are addressed in Section 3.4 of this EA.

The predicted peak noise levels resulting from detonation of 5-lb (2.3 kg) NEW explosives would be approximately 130 dBP and would not likely damage the USCG's LORAN-C facility. Detonations of 5-lb (2.3 kg) explosives at the Polnell Point Site are not likely to result in any damage to the USCG LORAN-C receiver antenna from shockwaves or ground

vibrations as the peak levels would be less than what is needed to break glass tubes (see Section 3.3 for discussion of noise impacts).

Terrace Site Alternative

The proposed Terrace Site is approximately 2,000 ft (610 m) from the nearest civilian residence at Scenic Heights; however, most of this distance is covered by dense forest, which would block views of the detonations and would slightly reduce the peak noise levels experienced in most residential areas, as discussed in Sections 3.3 and 3.6 of this EA.

Detonations could adversely affect boating use of Crescent Harbor. Commercial crabbing along approximately 2,000 linear ft (610 m) of Crescent Harbor shoreline would be excluded during EOD operations if the Terrace Site were selected. Recreation impacts are addressed in Section 3.4 of this EA.

Based on existing information, the Terrace Site Alternative is not likely to affect the LORAN-C site operated by the USCG. The distance between the Terrace Site and the LORAN-C site (2,060 ft [628 m]) is roughly comparable to the distance between the existing EOD DTR (1,680 ft [512 m]) site and the array (as shown in Figure 3.1-2). The proposed increase in size of the explosives from 0.5 to 5 lbs of TNT (0.2 to 2.3 kg) would result in peak levels of approximately 130 dBP at the LORAN-C site. This noise level would not break any tubes or interfere with USCG operations.

3.1.2.2 No Action Alternative

The No Action Alternative would not affect land use, other than to substitute one Naval mission support function (training) for another (storage), and thus would have no direct land use impacts at NASWI. The deactivation of the existing DTR would require EODMU ELEVEN to travel to another installation to conduct its training; the potential land use impacts from such an option are not addressed in this EA.

Under the No Action Alternative, the Navy will seek official designation of the area in the eastern portion of Crescent Harbor as a Restricted Area by permit from the ACOE (ROC, Conlow, 11/5/99). This would notify the public of access restrictions to either site through the USCG's official "Notice to Mariners" and on future NOAA navigational charts.

3.1.3 Mitigation Measures

There will be an unmitigated loss of open space; however, to ensure that future planning at NASWI considers the new EOD DTR, the following mitigation measure would be implemented:

- LU-1 The Navy will modify the NASWI Master Plan during the next update cycle to reflect the change in designated land use of the area within the fragmentation arcs at the proposed EOD training site from OS to TR, OP, or other appropriate land use designation.

To further ensure that no adverse impacts to the USCG's LORAN-C receiver site occur, the following mitigation measure could be implemented:

- LU-2 The Navy will consult with the USCG to accurately determine the likelihood of impacts to the LORAN-C receiver. If necessary, the Navy will work with the USCG to modify the DTR operation to prevent damage to the equipment, while still meeting the purpose and need of the Proposed Action.

To ensure that the Proposed Action is consistent with the City of Oak Harbor's Shoreline Master Program, the following mitigation measure would be implemented:

- LU-3 The Navy will acquire a Coastal Zone Consistency Determination in compliance with the Washington CZMP and will provide advanced written notification to the director of the City of Oak Harbor Department of Planning and Community Development of planned activity within the Shoreline Management Zone.

3.2 CLIMATE AND AIR QUALITY

This section addresses potential climate and air quality impacts associated with the two Proposed Action alternatives and the No Action Alternative.

3.2.1 Affected Environment

Whidbey Island has a uniform marine climate with temperature extremes modified by prevailing westerly winds from the Pacific Ocean. The marine influence is responsible for the relatively mild but distinct wet and dry seasons associated with the area. The mean annual temperature is 47°F (8°C). Average annual precipitation is approximately 20 inches (50 cm) due to the precipitation shadowing effect of the Olympic Mountains. These mountains cause prevailing southeast storms to drop most of their moisture before reaching Whidbey Island. The dry season begins in late spring, and temperatures peak toward the end of July and the beginning of August. On average, the northern portion of Whidbey Island experiences the lowest amount of precipitation in July and the highest amount in December. Snowfall is a relatively rare occurrence and usually melts within a day or two.

Average monthly temperature ranges from approximately 39°F (4°C) in January to approximately 60°F (15°C) in August. Temperatures below 10°F (-12°C) are rare and they are of short duration. The yearly average temperature at the northern portion of Whidbey Island is about 50°F (10°C).

Prevailing winds at NASWI vary by month (Table 3.2-1). During the summer, winds are most often from the west or southwest, although peak winds often come from the south or southeast. In the winter, southeast prevailing winds occur, but can shift nearly any direction during storms. The Strait of Juan de Fuca modifies this general pattern over northern Whidbey Island, increasing the strength and shifting the direction to the west and northwest.

Table 3.2-1: Monthly wind direction and speed characteristics.

Month	Wind Direction		Wind Speed (kts)	
	Mean	Peak	Mean	Peak
January	SE	W	12	54
February	SE	W or S	12	58
March	SE	E	11	54
April	W	WSW	9	53
May	W	W	7	51
June	W	SE	6	39
July	SW	SE	7	44
August	W	S	5	49
September	W	W	6	51
October	SE	SSE	10	58
November	SE	SSE	12	58
December	SE	NW	12	58

Source: NASWI unpublished.

Due to the low solar heating of the land in winter, temperature inversions form at night and often last until late in the day. On occasion, such inversions can last for several days. Due to the poor vertical dispersion during these very stable atmospheric conditions, high concentrations of automotive-related pollutants may occur because pollutants emitted near ground level become trapped under the low inversion level. These high concentrations would mostly be confined to the more congested areas of Puget Sound, and they would rarely impact north Whidbey Island due to the area's low population.

To measure existing air quality, the Washington Department of Ecology (WDOE) maintains a network of air quality monitoring stations throughout Washington State. In general, these stations are located in areas perceived to have air quality problems, usually in or near urban areas or close to specific large sources of air pollution. A few stations are located in remote areas to provide an indication of regional air pollution levels. Based on monitoring information collected over a period of years, the WDOE and U.S. Environmental Protection Agency (EPA) designate regions as "attainment" or "nonattainment" areas for particular air pollutants. Attainment status is therefore a measure of whether air quality in an area complies with the National Ambient Air Quality Standards (NAAQS), which are listed in Table 3.2-2. All of Whidbey Island is considered an attainment area for all pollutants.

Monitoring of ambient air quality on Whidbey Island is limited. The Northwest Air Pollution Authority (NWAPA) operated a total suspended particulates (TSP) monitoring station in the City of Oak Harbor, but it was discontinued after documenting several years of low TSP levels.

WDOE currently operates a sulfur dioxide (SO₂) ambient sampler near an industrial complex in Anacortes. Measured sulfur dioxide levels are well within the ambient air quality standards. Because of the low level of SO₂ emitted locally and the distance from Anacortes, this pollutant is not considered by NWAPA to be a problem in the Whidbey Island area. Carbon monoxide (CO), oxides of nitrogen (NO_x), particulate matter (PM₁₀), and ozone (O₃) are not measured on Whidbey Island. However, the ambient levels of these pollutants are not expected to be of concern due to the lack of major sources of these pollutants on the island. NASWI is the only significant source of emissions in the Oak Harbor area. The NASWI emissions inventory for year 1997 included the following levels of criteria pollutants (NWAPA 1999):

- 67 tons (60.8 metric tons) of volatile organic compounds (VOC),
- 34 tons (30.8 metric tons) of PM₁₀,
- 30 tons (27.2 metric tons) of NO_x,
- 8 tons (7.3 metric tons) of SO₂, and
- 31 tons (28.1 metric tons) of CO.

Table 3.2-2: Ambient air quality standards.

Pollutant	National		Washington State	NWAPA
	Primary	Secondary		
Total Suspended Particulate Matter Annual Geometric Mean ($\mu\text{g}/\text{m}^3$) 24-Hour Average ($\mu\text{g}/\text{m}^3$)			60 150 ^(a)	
Inhalable Particulate Matter (PM₁₀) Annual Average ($\mu\text{g}/\text{m}^3$) ^(b) 24-Hour Average ($\mu\text{g}/\text{m}^3$)	50 150 ^(c)	50 150 ^(c)	50 150 ^(d)	50 150 ^(d)
Particulate Fallout Monthly Average (g/m²) Industrial Area Industrial Area Burning Wood Waste Residential/Commercial Area Residential/Commercial Area Burning Wood Waste				10 5 5 3.5
Fine Particulate Matter (PM_{2.5})^(*) Annual Average ($\mu\text{g}/\text{m}^3$) 24-Hour Average ($\mu\text{g}/\text{m}^3$)	15 ^(e) 65 ^(f)	15 ^(e) 65 ^(f)	(g)	(g)
Sulfur Dioxide (SO₂) Annual Average (ppm) 24-Hour Average (ppm) 3-Hour Average (ppm) 1-Hour Average (ppm) 1-Hour Average (ppm) 5 Minute Average (ppm)	0.03 0.14 ^(a) -- -- -- --	-- -- 0.50 ^(a) -- -- --	0.02 0.10 ^(a) -- 0.25 ^(h) 0.40 ^(a)	0.020 0.100 ^(a) -- 0.250 ^(h) 0.400 ^(a) 0.800 ^(a)
Carbon Monoxide (CO) 8-Hour Average (ppm) ^(a) 1-Hour Average (ppm) ^(a)	9 35	9 35	9 35	9.0 35.0
Ozone (O₃) 8-Hour Average (ppm) ^(*) 1-Hour Average (ppm)	0.08 ⁽ⁱ⁾ 0.12 ⁽ⁱ⁾	0.08 ⁽ⁱ⁾ 0.12 ⁽ⁱ⁾	(g) 0.12 ^(d,j)	(g) 0.120 ^(b)
Nitrogen Dioxide (NO₂) Annual Average (ppm)	0.053	0.053	0.05	0.050
Lead (Pb) Quarterly Average ($\mu\text{g}/\text{m}^3$)	1.5	1.5		1.5
NOTES: $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter; ppm = parts per million; blank cells indicate no standard. All values not to be exceeded except as noted; all averages arithmetic except TSP annual geometric mean. (a) Not to be exceeded more than once per year (b) Attainment based on 3-year average (c) Attainment based on 3-year average of the 99th percentile of 24-hour PM ₁₀ concentrations (d) Attainment if expected number of events above this limit is less than or equal to one (e) Attainment based on 3-year average of annual arithmetic mean PM _{2.5} concentrations from single or multiple community-oriented monitors (f) Attainment based on 3-year average of the 98th percentile of 24-hour PM _{2.5} concentrations (g) Not yet established (h) Not to be exceeded more than twice in seven consecutive days (i) Attainment based on 3-year average of the 4th highest daily maximum 8-hour ozone concentration (j) Federal 1-hour ozone standard to lapse in each existing nonattainment area after attainment demonstration based on existing standard as per note (d). In the Puget Sound region, the 1-hour standard was revoked on June 5, 1998. (*) On May 14, 1999, a divided 3-judge panel of the US Court of Appeals for the D.C. circuit remanded the new air quality standards for ozone and particulate matter to EPA for further review. The implications of this ruling are not yet known, and the case continues.				

3.2.2 Environmental Consequences

The environmental consequences of the Proposed Action and the No Action Alternative on climate and air quality are discussed separately in the following two sections.

3.2.2.1 Proposed Action

The Proposed Action would result in minor short-term impacts to regional and local air quality, primarily from construction activity and actual detonations. The following sections describe the construction and operation impacts from the two Proposed Action alternatives.

Construction Impacts

Polnell Point Alternative

The Polnell Point Alternative would result in minor short-term construction air quality impacts from clearing vegetation, grading the site and the approximately 2,000-ft-long (610 m) road on the isthmus, and constructing the DTR. Construction equipment would generate exhaust emissions, while movement of construction equipment, handling and dropping of material, and wind erosion of exposed surfaces would generate small amounts of fugitive dust. These impacts would be most significant in areas immediately adjacent to the site; no effects are anticipated to residential areas. Construction would take approximately 1-2 weeks.

The only additional potential air quality impacts would be from burning any cleared vegetation. Open burning primarily generates particulate matter emissions and can have significant air quality impacts in the immediate vicinity of the site. The Polnell Point Alternative would require the removal of woody vegetation, which might result in a small amount of burning. With proper mitigation measures (see Section 3.2.3), the construction-related air quality impacts would not be significant.

Terrace Site Alternative

The Terrace Site Alternative would result in similar levels of construction-related emissions as the Polnell Point Alternative. However, this alternative would require less road grading/improvement and no woody vegetation removal and would, therefore, result in slightly less air quality impact. With proper mitigation measures (see Section 3.2.3), the potential short-term construction-related air quality impacts would not be significant.

Operational Impacts

As part of the Proposed Action, the exiting EOD DTR would become inactive. This would decrease the emissions in the immediate area that are currently caused by detonation of 0.5-lb (0.2 kg) NEW explosive. The following sections discuss the potential operational impacts to air quality from the two Proposed Action alternatives.

Polnell Point

The Polnell Point Alternative would result in an on-station DTR with a limit of 5-lb (2.3 kg) NEW per detonation. The DTR would use only an uncased, non-fragment producing, TNT-equivalent explosive. The DTR would be for approximately 15 detonations per week (Monday-Friday, 7 a.m. to 10 p.m.) as well as limited demolition training one weekend per month by the EODMU SEVENTEEN unit.

Whenever explosives are detonated, gaseous pollutants are produced and released into the atmosphere. CO is the pollutant emitted in the greatest quantity from an explosive detonation. Other pollutants emitted during detonations are ammonia, hydrogen cyanide, ethene, ethane, and methane. Of these, ammonia and hydrogen cyanide are considered toxic air contaminants. For ammonia, approximately 29 lbs (13 kg) are released per ton (907 kg) of TNT. This would equate to approximately 0.07 lb (0.3 kg) per 5 lbs (2.3 kg) of explosive. Assuming that 15 detonations occur per week, a maximum of approximately 1.1 lbs (0.5 kg) of ammonia would be released in one week or 57 lbs (26 kg)/year. The Washington Department of Ecology (WAC 173-460-080) classifies as a "small quantity emission rate" an ammonia source that emits less than 2 lbs (0.9 kg)/hour or 17,520 lbs (7,947 kg)/year. Thus, ammonia emissions would be well below the level of significance. It would take 29 detonations within one hour to cause significant ammonia emissions.

For hydrogen cyanide, approximately 27 lbs (12 kg) are released per ton (907 kg) of TNT. This would equate to approximately 0.07 lb (0.03 kg) per 5-lb (2.3 kg) explosion. Assuming that 15 detonations occur per week, a maximum of approximately 1 lb (0.5 kg) of hydrogen cyanide could be released per week or 53 lbs (24 kg)/year. WAC 173-460-080 classifies as a "small quantity emission rate" a hydrogen cyanide source that emits less than 0.6 lb (0.3 kg)/hour or 5,256 lbs (2,384 kg)/year. The hourly limit could be exceeded if more than eight 5-lb (2.3 kg) detonations were conducted in one hour. Because fewer than eight detonations would occur per hour, hydrogen cyanide emissions would not be considered significant.

None of these latter gases are released in significant concentrations. TNT, which is an oxygen-deficient explosive, produces more CO than most dynamites, which are oxygen balanced. Daily emissions from the DTR would vary depending on the number of detonations and the amount of TNT. The typical operation day would detonate a probably maximum 15 lbs (6.8 kg) of TNT (an average of 3 detonations of 0.5 lb to [0.23 kg] to 5 lbs [2.3 kg] TNT per day assuming 15 detonations per week). Therefore, the amount of regulated air pollutants released would be less than 15 lbs (6.8 kg) per day. According to emission factors published by the EPA, TNT explosives generate about 800 lbs (363 kg) of CO for every ton of TNT (EPA 1995). Thus, one detonation would produce 2 lbs (0.9 kg) of CO, while 3 detonations would produce at most 6 lbs (2.7 kg) of CO. There would be some short-term degradation of air quality in the immediate vicinity of the DTR. However, given the distance of the Polnell Point Site from the nearest residential areas (Crescent Harbor is 2.3 miles [3.2 km] and Polnell Shores is 0.4 mile [0.6 km]), the CO would dissipate to extremely low levels by the time it reaches human populations. Concentrations at specific locations cannot be determined without detailed dispersion modeling, but the levels would likely be well below the state standards. This would be particularly true if the project incorporates the proposed mitigation measures (Section 3.2.3).

To put this quantity of CO emissions in perspective, TNT emissions can be compared with common air pollution sources — the vehicle and the wood-burning fireplace (Figure 3.2-1).

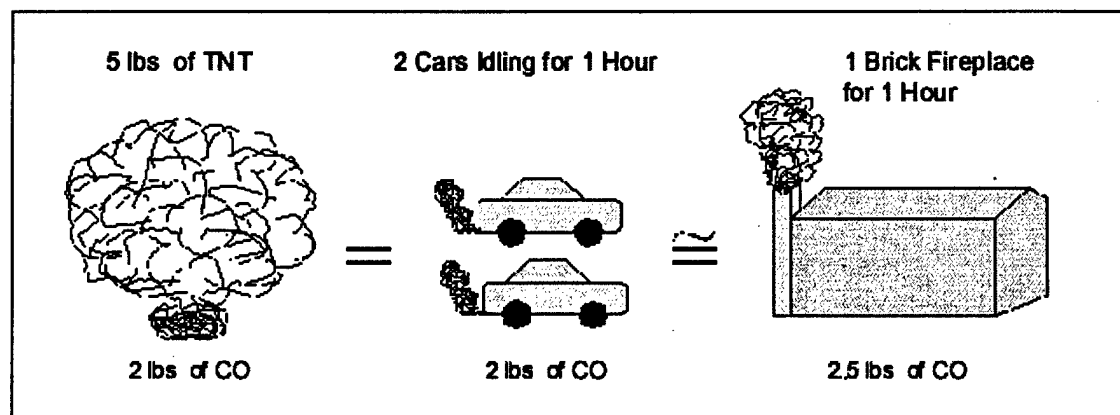


Figure 3.2-1. Comparison of CO Emissions from a TNT Detonation with Vehicular Emissions and Wood Burning Emissions.

An average vehicle on Whidbey Island emits about one pound of CO per hour while idling. Therefore, the total CO produced during a typical day at the DTR is equivalent to 6 cars idling for an hour. According to the EPA, a traditional brick fireplace generates about 253 lbs (115 kg) of CO per ton of dry wood burned (EPA 1995). Assuming the average fireplace burns about 20 lbs (9.1 kg) of dry wood per hour, the typical amount of daily emissions produced from the DTR is equivalent to the emissions from one residential fireplace burning for about 2.4 hours.

Particulate matter (PM) would be produced from each detonation as well, although most of the PM generated from an event is from the shattering and mobilization of the ground surface. The DTR would have at least 12 inches (30 cm) of sand surface; therefore, minimal inhalable fugitive dust (PM₁₀) would be produced compared with a surface such as topsoil. Particulate matter impacts from operation of the DTR would be noticeable immediately surrounding the site but would be insignificant at the closest residences, which are greater than 2,000 ft (600 m) from the site. A detailed dispersion model would be required to quantify levels, but the levels would not approach state standard levels.

The emergency burn box would be utilized to render safe any partially expended MK-28/58 marine markers. Burn site permits for the emergency disposal are issued on an annual basis from the WDOE. Burn operations would not be conducted during hours of darkness or when wind speeds exceed 15 mph (6.7 m/sec).

Terrace Site Alternative

The Terrace Site Alternative would result in similar operational emissions and particulate matter production to the Polnell Point Site and may result in minor short-term impacts immediately at the site. This site is slightly closer to the Crescent Harbor housing complex (1.4 miles [2.3 km]) and about the same distance (0.4 mile [0.6 km]) from the nearest Polnell Shores and Scenic Heights residences. Nonetheless, this alternative is not likely to cause significant air quality impacts, especially if appropriate mitigation measures are implemented (see Section 3.2.3). The operation of the emergency burn box would be similar to that described for the Polnell Point Alternative.

3.2.2.2 No Action Alternative

Under the No Action Alternative, no EOD DTR would be constructed at the Seaplane Base. This would result in no additional short-term construction or operational air quality impacts in the NASWI area. The deactivation of the existing EOD DTR under the No Action Alternative would decrease the emissions in the immediate area that are currently caused by detonation of 0.5-lb (0.2 kg) NEW explosive. Because the existing EOD DTR will become inactive in the near future, the EODMU ELEVEN unit would need to conduct its training at another installation. This would result in additional short-term emissions at that location, as well as potentially substantial emissions during travel to and from the unidentified site. This EA does not address the potential environmental impacts of relocating the EODMU ELEVEN training activity to another installation.

3.2.3 Mitigation Measures

By implementing the following three mitigation measures as part of the Proposed Action, there would be no adverse effects to climate or air quality from either action alternative:

- CAQ-1 Construction activities associated with the Proposed Action will comply with NWAPA Regulations, Section 550, Preventing Particulate Matter From Becoming Airborne. The following measures have been developed in consultation with the NWAPA for the control of fugitive dust generated during construction (NWAPA 1994; ROC, Mahar, 1998):
- During all land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities, fugitive dust emissions will be effectively controlled by watering or soaking;
 - All disturbed areas, including storage piles, that are not being actively utilized for construction purposes will be effectively stabilized of dust emissions by applying water, chemical stabilizers/suppressant, or vegetative ground cover;
 - Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles will be effectively stabilized of fugitive dust emissions by utilizing sufficient water or chemical stabilizer/suppressant;

- Vegetation outside of the clear zone will be replanted in disturbed areas as quickly as possible; and
- Ground-disturbing activities will be suspended during high wind conditions (25 mph [40 km/hr] or greater).

CAQ-2 By detonating explosives only under favorable conditions, atmospheric dilution of the released pollutants would be maximized, thus ensuring that no adverse impacts occur in the nearby residential areas. These favorable conditions are defined as follows:

- Clear skies with billowy cloud formations,
- During warm periods of the day, and
- Under a rising atmospheric pressure.

No detonations would be allowed under atmospheric conditions that lead to inversions such as:

- Clear days when layering of smoke or fog are observed,
- Cold hazy or foggy mornings,
- Generally high barometer readings with low temperatures.

CAQ-3 A NWAPA permit will be updated to reflect the new DTR and burn box location.

3.3 NOISE

This section addresses potential noise impacts associated with the two Proposed Action alternatives and the No Action Alternative.

3.3.1 Affected Environment

Information on noise levels in the project vicinity was taken from a previous Navy study on NASWI, as well as from actual measurements and new analyses conducted for this Proposed Action. The noise study conducted for this EA contains detailed information on the methodology and results of this analysis, as well as background information on noise analyses in general. That study is presented in full in Appendix A to this EA; please refer to the appendix for more detailed information. The following is background information on noise.

3.3.1.1 Background Information

Sound travels as a series of disturbances compressing and relaxing the medium it travels through, whether air or water. The frequency of a sound wave is the number of disturbances, or cycles, that pass a fixed point per second. Cycles per second are referred to in units of cycles per second (Hertz [Hz] or kilohertz [kHz], 1,000 Hz). The audible frequency range for humans varies from about 20 Hz to 16 kHz (Manci et al. 1988). The detonations associated with the Proposed Action would be in the 20-50 Hz range.

Sound is measured in the logarithmic scale of decibels (dB), which approximates the way in which humans perceive sound. The dB is not an actual unit of measure but refers to a standard that is used for comparison of different noise levels. The compressed logarithmic scale allows for comparisons of a wide range of sounds from a soft breeze to a large explosion. Differences of about 5 dB are typically noticeable to humans. An increase of 10 dB represents a doubling of noise levels. As a point of reference, the sound levels from some typical sources are provided in Table 3.3-1.

Table 3.3-1: Sounds levels from typical sources and reference points.

Typical Source	Sound Level (dB)
.303 caliber rifle at ear level	160
Jet aircraft taking off at 25 m	140
Human pain threshold	120
Very noisy factory	100
Ringing alarm clock at 1 m	80
Ordinary conversation at 1 m	60
Quiet office	40
Threshold of human hearing	0
Source: Ewbank (1977)	

The frequency-weighting most often used to evaluate environmental noise is A-weighting, or dBA. An alternative frequency weighting system, C-weighting, does not reduce the level of low frequency noise as much as the A-weighting system, so C-weighting is used to describe very loud, low frequency sounds (e.g., explosions). Although low frequency noise is less audible to humans, C-weighting (dBC) is often used to assess potential annoyance from structural rattling due to the low frequency noise. For discrete short-term events, peak noise levels (unweighted or weighted) or maximum levels (L_{max}) are often used to describe the sound level and potential effects of the noise event. The L_{max} is the maximum sound level; when recorded by a sound level meter, its magnitude can be affected by the sampling rate of the meter. The peak noise level (or linear peak) is the instantaneous sound level, not subject to sampling rate. This instantaneous peak event is called the unweighted peak when it does not consider a weighting scheme. Noise levels are discussed in Appendix A as either unweighted (dB), A-weighted (dBA), or C-weighted (dBC).

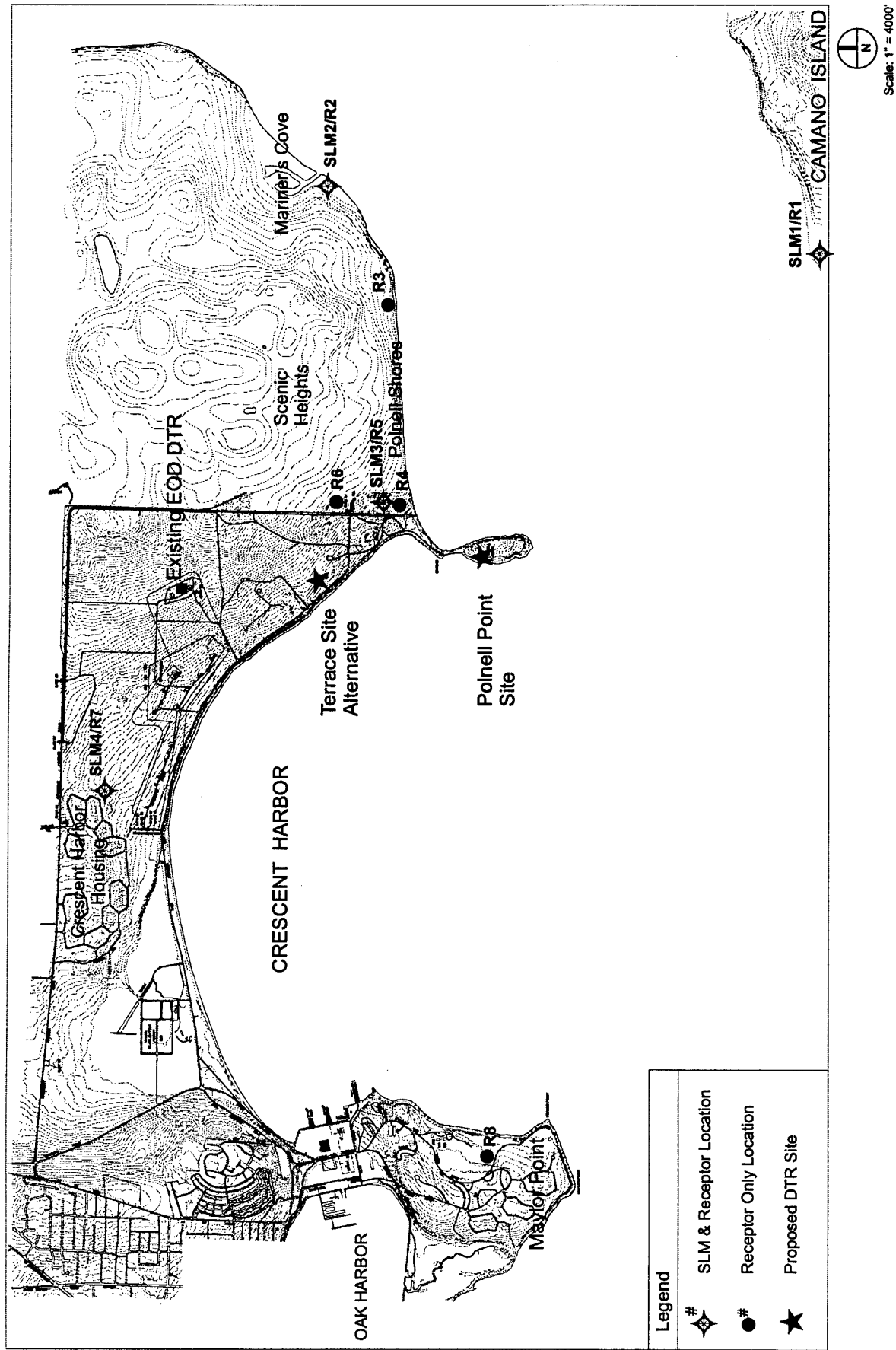
Existing Noise Levels in the Project Vicinity

In general, the residential areas to the east and northwest of the proposed alternative sites are characterized by relatively low existing noise levels, except during periodic but infrequent military aircraft overflights. The 1984 Air Installation Compatible Use Zone (AICUZ) study (Department of the Navy 1986) determined that the Crescent Harbor housing complex located approximately 8,450 ft (2,576 m) northwest of the Terrace Site had day-night sound levels between 65 and 75 dBA. The day-night sound level (L_{dn}) is the A-weighted equivalent sound level for a 24-hour period with an additional 10 dBA weighting imposed on the equivalent sound levels occurring during nighttime hours (10 p.m. to 7 a.m.). The Scenic Heights and Polnell Shores areas were generally below 65 L_{dn} , dBA (Department of the Navy 1986). The DoD, Federal Aviation Administration (FAA), and Department of Housing and Urban Development have identified 65 L_{dn} as a reasonable measure of the threshold of adverse noise effects. As of 1986, there was only one noise complaint recorded from aircraft noise in the Crescent Harbor housing complex (Department of the Navy 1986).

Existing sound level measurements taken in September 1999 at locations in the vicinity of the Proposed Action are summarized in Table 3.3-2 for Sound Level Measurement (SLM) sites near the Proposed Action (Figure 3.3-1, Appendix A). In general, the sound levels at all measurement locations were erratic and had large ranges over both daytime and nighttime hours.

Since these locations were fairly isolated from most traffic noise and industrial/commercial facilities, it is likely that the large ranges were due to both periodically windy conditions and to nearby aircraft and watercraft activity. The highest unweighted peak sound levels measured at SLM1, SLM2, SLM3, and SLM4 were 113, 117, 114, and 118 dB, respectively.

The existing EOD DTR at the Seaplane Base is used for up to 15 detonations per week of up to 0.5-lb (0.2 kg) NEW explosives. To date, operation of the existing DTR has not resulted in any noise complaints from residents.



Environmental Assessment
EOD Detonation Training Range
Seaplane Base, NASWI

Sound Level Measurement (SLM) and Receptor Locations

Figure 3.3-1

Table 3.3-2: Existing sound level measurements at selected sensitive receptor sites at NASWI Seaplane Base, September 1999.

Accepted: Class at NASWI Seaplane Base, September 1999.

SLM Location		Range of Levels (dBA)							
		Leq	Lmax	Highest Unweighted Peak	L2	L8	L25	L90	Ldn
1	Day	45-66	63-94	113	54-75	47-62	40-61	29-57	59
	Night	29-52	44-78	NA	32-58	30-55	29-53	28-49	
2	Day	44-64	61-91	117	50-75	47-66	37-61	24-50	60
	Night	35-57	54-77	113	37-65	31-61	28-56	22-48	
3	Day	43-70	68-95	114	51-81	42-61	37-52	30-45	61
	Night	30-57	41-81	NA	32-67	31-56	30-47	29-41	
4	Day	NA	64-101	118	47-73	43-56	40-51	33-37	NA
	Night	NA	50-81	88	37-69	31-62	28-50	25-32	

NA - Not Available
 Leq is the single value of sound level for any desired duration, which includes all of the time-varying sound energy in the measurement period.
 Notes: Daytime hours are 7 a.m. to 10 p.m. Nighttime hours are 10 p.m. to 7 a.m.
 L90 represents a sound level that is exceeded 90 percent of the time and is usually considered a background sound level.
 SLM1: Located in back of the residence at 1000 Brokaw Road, adjacent to Camp Grande. This location is representative of residences on Camano Island, directly across from Polnell Point.
 SLM2: Located in back of the residence at 2160 Stoney Beach Lane. This location is representative of residences in Mariner's Cove, a private marina and residential development east of the NASWI Seaplane Base on the shoreline of Whidbey Island.
 SLM3: Located at a residence in Scenic Heights overlooking Polnell Point. This location is representative of Scenic Heights residences.
 SLM4: Located in back of the residence at 1631 Larch Drive in Crescent Harbor housing complex. This location is representative of numerous residences in the housing area.

3.3.2 Environmental Consequences

Noise impacts related to the proposed EOD DTR at the NASWI Seaplane Base would be due to construction activities and operations (detonations). These are discussed in the following sections.

3.3.2.1 Proposed Action

The following sections describe the construction and operation noise impacts from the two Proposed Action alternatives.

Construction Impacts

The following sections discuss the potential noise impacts from construction of the DTR at the Polnell Point and Terrace Sites.

Polnell Point Alternative

Construction of the DTR at the Polnell Point site would consist of removal of vegetation, site grading, grading and improving the 2,000 ft (610 m) of access road on the isthmus, and erection of an 8-ft (2.4 m) high DTR barrier. These construction activities would cause a minor increase in noise during a 1- to 2-week construction period and would be distant from the nearest residences that are more than 0.4 mile (0.6 km) to the north, so no significant construction noise impacts are anticipated. Construction activity is exempt from Washington's noise regulations during daytime hours (7 a.m. to 10 p.m.).

Terrace Site Alternative

Construction impacts at the Terrace Site would be similar to the Polnell Point Alternative. However, less site and road grading would be required and would likely result in slightly less noise impacts to residences.

Operational Impacts

For the purpose of this EA, an adverse noise impact could occur under two circumstances. First, an adverse noise impact would occur if the noise levels caused structural damage to nearby residences. Minor structural damage, such as broken windows, could occur if peak noise level is substantially greater than 127 dBP. Additionally, an adverse noise impact could occur if peak noise levels were loud enough to cause annoyance to nearby residents substantial enough to result in frequent noise complaints. Depending on the magnitude of peak noise levels, as well as frequency (Hz), duration, meteorological conditions, time of day, number of detonations per day and week, and specific receptor location, the increased peak noise levels could cause impacts ranging from annoyance to short-term pain. The likelihood of impact was assessed by comparing the predicted noise levels at receptor sites with the Naval Surface Warfare Center, Dahlgren Laboratory (NSWC/DL) noise guidelines and published information related to effects of noise on humans (Table 3.3-3).

There are no federal or state regulations that control noise from explosives (see Appendix A for additional discussion).

In addition, information in the literature relative to noise impacts on humans was used to evaluate the potential impacts. The threshold of pain is approximately 135 dB for all frequencies (NANCO 1981). Other references have indicated potential hearing pain at levels as low as 120 dB (e.g., Ewbank 1977). The Occupational Safety and Health Administration (OSHA) regulations specify that employees not be exposed to impulse noise that exceeds 140 dB peak (NANCO 1981).

Table 3.3-3: NSWC/DL impulse noise guidelines (unweighted).

Predicted Noise Level, dB, unweighted	Risk of Complaints
<120	Low risk of noise complaints
121-124	Noise complaints may occur
124-127	Increased risk of noise complaints
>127	Possibility of complaints due to minor structural damage and ear pain.
<i>Source: Sound Intensity Prediction System (SIPS) noise program for NSWC/DL; SIPS: Volume I - Reference Manual" (NSWCDD/TR-97/144), Section 7.1, page 26.</i>	

Detonation of explosives would cause short pulse noise events. The noise levels associated with these detonations were measured during a test 5-lb (2.3 kg) detonation at the Army's Fort Lewis site in Washington State during September 1999. Additionally, information provided by the Army's Center for Health Promotion and Preventive Medicine (U.S. ACHPPM) was used to calculate sound levels of varying amounts of explosive material. Table 3.3-4 presents the measured sound levels of 5-lb (2.3 kg) NEW detonation. Table 3.3-5 describes the general relationship between weight of explosive and sound levels during various meteorological conditions.

Table 3.3-4: Measured 5-lb explosive source noise levels.

Location	Unweighted Peak (dB)	C-weighted Lmax (dBC)	A-weighted Lmax (dBA)
At 1,250 ft	136	124	99
At 3,000 ft	129	118 ¹	83 ¹
¹ These levels were calculated using the frequency distribution information and the measured unweighted Lmax with impulse response time. Measured by MFG at Fort Lewis, September 1999.			

Table 3.3-5: Unweighted peak sound levels at 2,500 ft.

Amount of Explosive Material (lbs)	Meteorological Conditions		
	Base	Focus	Max
0.5	123	128	134
2.5	129	133	140
3	130	134	141
4	131	135	142
5	131	136	143
<i>Source: ROC, Stewart, 1999</i>			
<i>Base - Low winds, clouds, fall & winter, daytime</i>			
<i>Focus - Low stable clouds, very low winds, nighttime to 2 hr after sunrise, winter & fall</i>			
<i>Max - strong temperature inversion and wind with the receiver downwind from the source.</i>			

Using the Environmental Noise Model (ENM), a state-of-the-art noise prediction model, detonation sound levels at the nearest potentially affected receptors were estimated. ENM is a computer program that allows entry of detailed information on the acoustical characteristics of noise sources, intervening topography (including barriers and structures), and meteorological conditions. ENM computes noise levels at selected receiver locations based on the above inputs and internationally accepted noise calculation techniques.

Detonation noise levels (unweighted linear peak) were predicted for residential locations near the two proposed DTR sites under various meteorological conditions. These receptor locations are displayed in Figure 3.3-1. The vast majority of detonations would occur during weekday daytime hours (7 a.m. to 10 p.m.). Use of the DTR by EODMU SEVENTEEN approximately one weekend per month would result in a small number of detonations occurring on weekends.

To calibrate the ENM output, noise measurements were taken during 11 detonations of various weights of explosive at the existing DTR at NASWI on December 9, 1999 by NASWI personnel. The noise meter was placed 2,000 ft (610 m) southeast, of the DTR. There was a 2 m/sec wind blowing from the southeast, which resulted in reduced noise levels at the receptor location than would have occurred during calm or "downwind" conditions. The resultant noise measurements (Table 3.3-6) compared favorably with those predicted by the ENM under the modeled weather conditions. Using ENM, sound levels of a 5-lb (2.3 kg) NEW detonation were modeled for the topography, ground type, and meteorological conditions specified during the test detonations at the existing DTR site. Using the information provided in Table 3.3-5, the peak sound level with a 0.5-lb (0.2 kg) shot was estimated to be 8 dB lower than a 5-lb (0.2 kg) shot. Subtracting 8 dB from the modeled peak sound level resulted in an estimated unweighted peak sound level of 118 dB. This corresponded well to the 115.5, 119.5, and 116 dB peak levels measured during detonation of the 0.5-lb (0.2 kg) explosive.

Table 3.3-6. Unweighted peak noise measurements (dBP) 2,000 ft (610 m) from the existing DTR at NASWI.

Net Explosive Weight (NEW) of Explosive (lbs)			
0.25-lb	0.5-lb	0.75-lb	1.0-lb
109	115.5	116.5	115
111	119.5		116.75
114	116		117.5
111.5			

Source: ROC, Melaas, 3/13/00

Polnell Point Alternative

Relative to the measured existing peak noise levels, operation of the DTR at the Polnell Point Site would result in lower peak noise levels at Mariner's Cove (R2) and Crescent Harbor Naval housing (R7) during calm conditions with no temperature inversion (Table 3.3-7). However, peak noise events with operation of the DTR could be between 2 and 13 dB higher than peak events measured at receptors R1 and R5.

Table 3.3-7: Predicted unweighted peak noise levels (dB) at receptor sites in the vicinity of the Proposed Action.

Meteorological Conditions	Alternative	Receptor Sites							
		R1	R2	R3	R4	R5	R6	R7	R8
Calm, No Temperature Inversion	Terrace Site	113	107	112	126	126	127	113	112
	Polnell Point	115	112	120	128	127	123	115	113
Downwind, Temperature Inversion	Terrace Site	122	116	124	133	133	129	122	122
	Polnell Point	125	121	130	137	136	137	124	123
	Existing Peak Noise Level (dB unweighted ¹)	113	117	n/a	n/a	114	n/a	118	n/a

Shaded cells indicate peak sound levels greater than 127 dB, which could result in a high potential for noise complaints and a possibility of damage. Hatched cells indicate peak sound levels > 120 dB and ≤ 127 dB, which could result in a moderate risk of complaint.

R1: Nearest Camano Island residences
R2: Mariner's Cove Marina
R3: Near shoreline of Whidbey Island between Scenic Heights and Mariner's Cove
R4: Residence in Scenic Heights, nearest to and overlooking Polnell Point
R5: Residence in Scenic Heights, overlooking Polnell Point
R6: Residence in Scenic Heights, near Gate 24 to NASWI Seaplane Base
R7: Crescent Harbor housing complex
R8: Maylor Point House
n/a: not measured
¹ Peak noise source is unknown and could include weather-related noise.

In all, 3 of 8 receptor sites are predicted to experience unweighted peak noise levels above 120 dB (but less than or equal to 127 dB) during detonations at Polnell Point occurring under calm conditions and, according to NSWC/DL guidelines, may result in increased noise complaints from nearby residents (Table 3.3-3, Table 3.3-7). These three receptor sites are located in Scenic Heights and represent the nearest receptors to the Polnell Point Site. Residents at the other receptor locations would experience peak noise levels at or below 120 dB and would thus not be significantly impacted.

No structural damage (e.g., broken windows) or actual hearing losses are anticipated from the proposed detonations during calm meteorological conditions.

Detonations at Polnell Point during temperature inversions coupled with windy conditions would result in unweighted peak sound levels greater than 120 dB at receptors located downwind from the detonation site. This could occur at any of the eight receptor sites depending upon the wind condition. When downwind, the three receptors in Scenic Heights/Polnell Shores would experience levels above 130 dB and would have a high risk of

complaint and an increased risk of hearing pain and/or structural damage (Table 3.3-3, Table 3.3-7). Under these unfavorable meteorological conditions, the unweighted peak sound levels could be 9 to 14 dB higher than current peak sound levels, depending on the receptor location.

In general, the prevailing wind patterns and the transmission of noise over the water from the Polnell Point Site significantly reduce the "window" of acceptable weather conditions to detonate explosives without causing significant adverse impacts to nearby residents. Modeling (Appendix A) indicates that detonation of 4 and 5 lbs (1.8 and 2.3 kg) of explosives would result in peak noise levels in residential areas of more than 120 dBP unless winds are blowing at least 22 mph (10 m/sec) from the east (90 degrees) or 11 mph (5 m/sec) from the northeast (45 degrees). EOD training with larger explosives would need to be limited to one half of the year as these meteorological conditions usually do not occur at NASWI during April to September (Table 3.2-1).

Terrace Site Alternative

Operation of the DTR at the Terrace Site would result in very little or no change in peak noise levels at Camano Island (R1), Mariner's Cove (R2), and Crescent Harbor housing (R7) during calm meteorological conditions with no temperature inversion (Table 3.3-7); peak noise events could be 8 dB louder than current measured levels at Scenic Heights overlooking Polnell Point (R4).

Detonations of 5-lb (2.3 kg) NEW explosives at the Terrace Site during calm conditions could result in peak noise levels between 120 and 127 dB at 3 receptor locations—all in the Scenic Heights neighborhood (Table 3.3-7). Levels in this range typically cause nearby residents to complain, again due to the perception of damage to structures and hearing, but do not typically cause any structural damage or pain to humans. The peak noise at the other five receptors would be less than 115 dB and would not likely affect residents.

When the receptors are located downwind from the Terrace Site in conjunction with a temperature inversion, the unweighted peak noise levels generated by detonations at the Terrace Site would be greater than 127 dB at 3 Scenic Heights receptors. These increases would be highly likely to result in noise complaints and possibly minor property damage (e.g., broken windows) and temporary hearing pain (Table 3.3-3, Table 3.3-7). The operation of the DTR at the Terrace Site would be unlikely to cause hearing pain or property damage at the other 5 receptor locations, but would still exceed the 120 dB threshold at 4 of the other 5 sites, resulting in complaints due to annoyance and the perception of damage (Table 3.3-3, Table 3.3-7).

Under favorable weather conditions, the Terrace Site would result in slightly lower peak noise levels at 7 of 8 receptor sites relative to the Polnell Point Alternative; although one receptor in Scenic Heights near Gate 24 would experience slightly greater peak levels under this alternative (Table 3.3-7). Under downwind conditions, all 8 receptors would have lower peak noise levels under this alternative compared to the Polnell Point Site. The general reduction in peak noise is likely due to a combination of difference in substrate (sound

travels farther over water than over land), topography (the ground level slopes and curves away from receptors and provides some barrier to noise), greater distance, and vegetation.

Additional modeling (Appendix A) indicates that different meteorological conditions allow different weights of explosive to be detonated at the Terrace Site. In general, 5-lb (2.3 kg) explosives can be used with east or southeast winds that are greater than 6.7 mph (3 m/sec), a condition that is relatively common during spring and summer. At other times of the year or under other summer weather conditions, less explosive can be detonated without causing significant effects to nearby residents. Section 3.3.3 describes specific mitigation measures that will reduce adverse impacts to residents in the area.

3.3.2.2 No Action Alternative

Under the No Action Alternative, the existing DTR at the Seaplane Base would be deactivated and would result in a slight reduction in peak noise levels at the Crescent Harbor housing area and in portions of Scenic Heights.

The No Action Alternative would also result in the EODMU ELEVEN conducting its training at another installation. The increased noise that would result from that training is not assessed in this EA.

3.3.3 Mitigation Measures

No significant construction noise impacts are anticipated from the proposed project. Therefore, no construction noise mitigation is proposed.

Modeling indicates that increasing the explosives from 0.5 to 5.0 lbs (0.2 to 2.3 kg) NEW explosives would create potentially significant impacts to nearby residents. The Terrace Site provides a greater opportunity for utilizing 5-lb (2.3 kg) explosives. Therefore, a detailed set of mitigation measures was developed for that alternative. Operation noise impacts can be minimized by implementing the mitigation measures summarized below.

- N-1 To greatly reduce the potential for noise complaints and to eliminate the potential for damage, detonations should only be conducted during specific meteorological conditions that take into account the temperature gradient, wind direction and speed, and amount of explosive to be detonated. As part of this noise mitigation measure, detonations at the DTR at the Terrace Site will establish a new Standard Operating Procedure (SOP) that takes into account the meteorological conditions specified in Table 3.3-8. The new SOP would include a protocol for EOD personnel to contact NASWI meteorologists to confirm weather conditions at the beginning of each day's training. EOD personnel will utilize portable wind meters to detect any significant shifts in winds throughout each day's training and will suspend training if conditions become unacceptable. This information will be recorded in a log maintained by the EODMU ELEVEN.

**Table 3.3-8. Net Explosive Weight (NEW) allowable at the Terrace Site
Alternative under various meteorological conditions to limit off-station noise
levels to < 120 dBP.^{1,2}**

General Conditions	Wind Speed/Direction ³	Net Explosive Weight (NEW) Permitted
Sunny spring and summer days April—September (1000—1600 hrs)	≥ 16.8 mph (7.5 m/sec)—50°--160°, or ≥ 11.2 mph (5 m/sec)—45°--145°, or ≥ 6.7 mph (3 m/sec)—70°--125°	Up to 5 lbs (2.3 kg)
Sunny spring and summer days April—September (0800—2200 hrs)	≥ 16.8 mph (7.5 m/sec)—45°--170°, or ≥ 11.2 mph (5 m/sec)—45°--160°, or ≥ 6.7 mph (3 m/sec)—45°--150°, or ≥ 4.5 mph (2 m/sec)—35°--135°	Up to 3 lbs (1.4 kg)
Cloudy spring or summer days (mostly cumulus, no stratoform clouds below 3000 ft) or fall and winter days with no clouds or mostly cumulus clouds	≥ 16.8 mph (7.5 m/sec)—25°--180°, or ≥ 6.7 mph (3 m/sec)—15°--180°, or ≥ 4.5 mph (2 m/sec)—5°--180°, or < 4.5 mph (2 m/sec)—0°--200°	Up to 1 lb (0.4 kg)
Cloudy winter or fall days with stratoform clouds where no “broken” or “overcast” layers are reported below 3,000 ft.	≥ 16.8 mph (7.5 m/sec)—15°--190°, or ≥ 11.2 mph (5 m/sec)—5°--170°, or ≥ 6.7 mph (3 m/sec)—340°--205°, or ≥ 4.5 mph (2 m/sec)—295°--205°, or < 4.5 mph (2 m/sec)—0°--360°	Up to 0.5 lb (0.2 kg)
¹ 120 dBP is threshold of increasing risk of receiving noise complaints from public.		
² An overriding condition for detonation of any NEW is that no temperature inversion exists below 5,000 ft.		
³ Wind directions are expressed in degrees from magnetic north.		

N-2 Information and education of residents affected by high noise levels can help increase residents' understanding and acceptance of noise levels. These programs could include:

- Warn nearby residents of potential detonations, especially at the beginning of the range use. Discuss the expected frequency of occurrence of detonations as well as what the residents may expect to experience (e.g., rattling of windows). This may be conducted by way of an “open house” or public meeting.
- Conduct a test detonation with noise monitoring at which the residents are invited to attend. Have someone on hand to discuss the measured noise levels and what they might mean.
- If possible, give warnings to nearby residents when periods of frequent detonation activity may occur through distribution of notices (e.g., mail or newspapers).

N-3 NASWI personnel will receive and monitor any noise complaints received from the public. If necessary, NASWI personnel will conduct additional noise level monitoring during DTR operation to document actual noise levels off of NASWI property. Results of the monitoring could be used to modify the restrictions presented in Table 3.3-8 to address any significant noise problems.

3.4 RECREATION RESOURCES

This section addresses potential recreation resource impacts associated with the Proposed Action and No Action Alternative.

3.4.1 Affected Environment

Portions of the Seaplane Base are used for outdoor recreation by Navy personnel and dependants. Authorized outdoor recreational opportunities at the Seaplane Base include beach combing along Crescent Harbor, boating, and shellfishing. Pheasant hunting is allowed during the fall hunting season on Navy property north of the ordnance magazines and east of Crescent Harbor housing. However, access to areas immediately surrounding the Terrace and Polnell Point sites is currently prohibited.

The waters off Polnell Point and Crescent Harbor are popular sailing, fishing, crabbing, and boating areas. Annual attractions include the Whidbey Island Race Week, with approximately 150 participating sailboats every July. Annual fishing derbies take place in November and February for chinook salmon. In addition, the beaches on either side of the Polnell Point isthmus outside of the restricted area are popular destinations for boats anchoring in the shelter afforded by the peninsula (ROC, Witt, 11/4/99).

Since most of this portion of the base is officially closed, recreational activities occurring here would technically be trespassing, but it is a large area with a minimal security presence outside the high-security ordnance magazine storage area. Examples of unauthorized recreation include limited horseback riding by Naval families near the Terrace Site.

3.4.2 Environmental Consequences

3.4.2.1 Proposed Action

The Proposed Action would preclude recreational access within a 1,075-ft (328 m) radius of the EOD DTR during operations. Shore-based recreational activities, including horseback riding, shellfishing, and beach combing, would also be excluded. However, because the shorelines affected are on NASWI and off limits to the public, the Proposed Action would not affect most recreational activity in the area.

Construction Impacts

Polnell Point Alternative

Development of the Polnell Point DTR would not have any direct effects on recreation, as access to Polnell Point is prohibited.

Terrace Site Alternative

No construction-related recreation impacts are anticipated from proposed development of this site.

Operational Impacts

Detonations occurring at either site could affect both land- and water-based recreational activities. Fishing, crabbing, and other water-based activities, as well as use of beach areas occurring within the fragmentation arcs of either selected EOD DTR site, would be incompatible with ordnance detonation training activity and would be prohibited within the restricted area in the eastern portion of Crescent Harbor (Figure 3.4-1). Even activities occurring outside the fragmentation arc could be affected by noise disturbance.

Polnell Point Alternative

No land-based recreation effects would occur, as Polnell Point is already in a restricted area. The fragmentation arc would encompass both sides of the Polnell Peninsula and exclude approximately 60 acres (24 ha) from recreational use during detonation activity. Recreational boats would be restricted during training operations by buoys and patrol. Land access would be restricted by the use of red "BRAVO" warning flags. In addition to access limitations, boaters that are outside of the restricted zone may hear the detonations. These impacts are not anticipated to be significant.

Terrace Site Alternative

Use of the Terrace Site would limit unauthorized horseback riding and other land-based recreational activities in the western portions of the Seaplane Base. This area is not heavily used and is actually off-limits to unauthorized personnel. Close to 2,000 ft (610 m) of shoreline would no longer be available for recreational use. In addition, approximately 16 acres (6.5 ha) of water surface area within the newly created ACOE-approved restricted area would be temporarily off limits to boating during detonation operations at the Terrace Site. The recreational impacts would be minor.

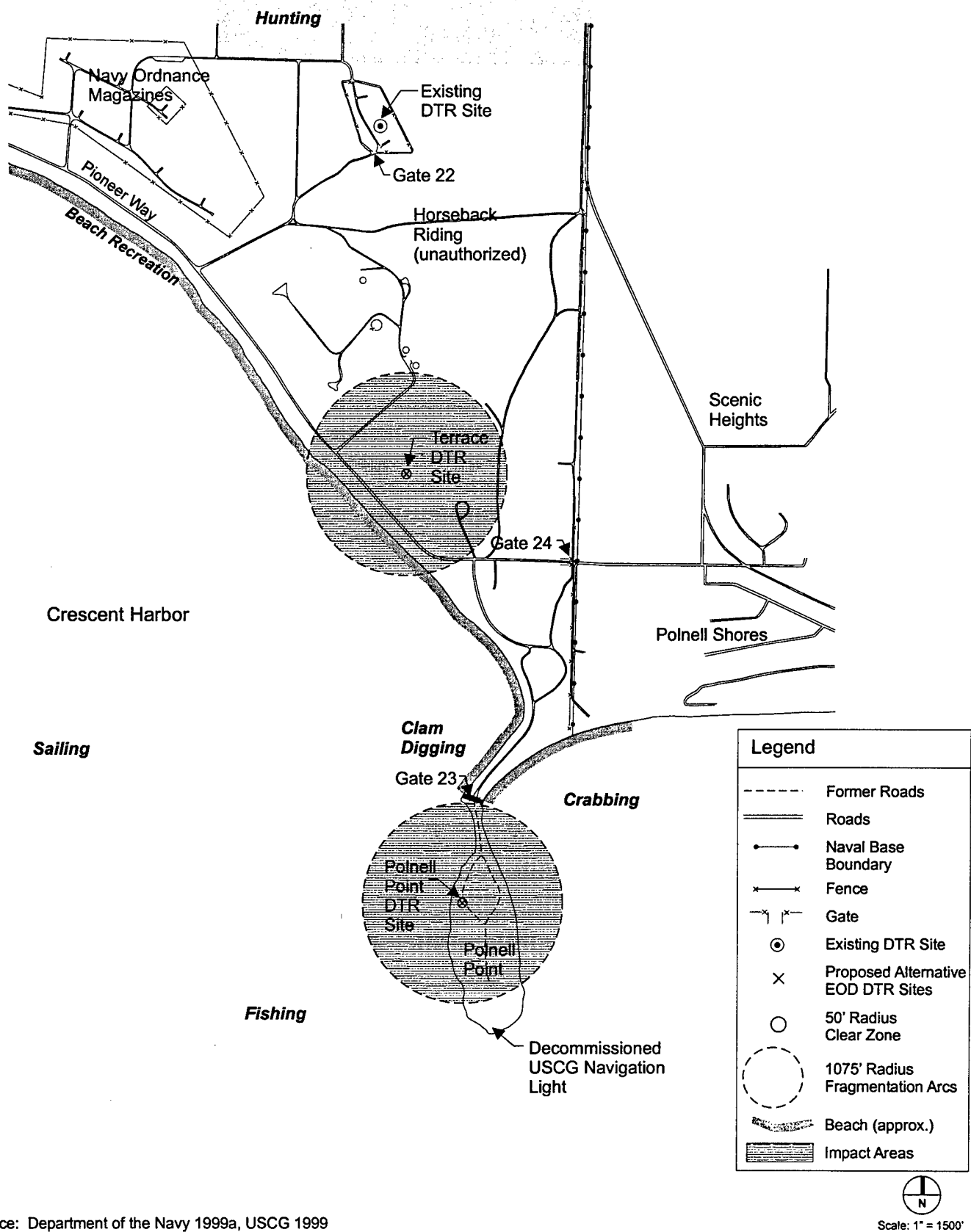
3.4.2.2 No Action Alternative

Under the No Action Alternative, recreational opportunities would remain unaffected. The restricted area established in eastern Crescent Harbor would still be enforced during other waterborne EOD training activities.

3.4.3 Mitigation Measures

To minimize adverse effects on recreational opportunities and increase public safety:

REC-1 EODMU ELEVEN will limit detonations to non-holiday weekdays (7 a.m. to 10 p.m.) except for one weekend per month for EODMU SEVENTEEN training.



Environmental Assessment
for EOD Detonation Training Range
Seaplane Base, NASWI

Affected Recreation Resources

Figure 3.4-1

REC-2 EODMU ELEVEN will coordinate training schedules with organizers of major sporting events such as regattas and fishing derbies.

3.5 HISTORIC AND CULTURAL RESOURCES

This section addresses potential cultural/historical resource impacts associated with the Proposed Action and No Action Alternative.

3.5.1 Affected Environment

Three types of cultural resources may be potentially affected by the Proposed Action: (1) archeological resources, which may include sites or objects that have yielded or are likely to yield information important in prehistory or history; (2) historic resources, which may include districts, sites, buildings, structures, or objects that relate or convey some aspect of American history, architecture, engineering, archeology, and/or culture; and (3) traditional cultural properties (TCPs), which are districts, sites, buildings, structures, or objects that embody traditional cultural values and are historically and traditionally associated with those values. Activities that affect cultural resources are regulated by federal, state, and local laws. The primary law affecting cultural resources is the National Historic Preservation Act (NHPA) of 1966 (16 USC § 470), as amended. NHPA requires that project proponents identify any effects their actions may have on cultural resources listed in or eligible for listing in the National Register of Historic Places (NRHP, or National Register). The protection of Native American graves and remains is addressed by the NHPA and the Native American Graves Protection and Repatriation Act (NAGPRA). To date, no Native American graves or remains have been found at NASWI.

The Navy completed an historic resource survey of the Seaplane Base in 1997 that identified five historic resources eligible for listing in the NRHP (Department of the Navy 1997a). These resources include: (1) 3 individual buildings, (2) the proposed Seaplane Base Historic District (including 16 contributing buildings and structures), and (3) the Victory Homes Historic District (including 86 contributing buildings). These resources were determined eligible for listing in the NRHP by the State Historic Preservation Officer (SHPO) in 1997 and described in the Draft NASWI Historic Resources Survey (Department of the Navy 1997a). SHPO concerns and comments have been addressed and were incorporated into a draft Integrated Cultural Resources Management Plan (ICRMP) for NASWI prepared in 1999 (Department of the Navy 1999b). This draft document is still receiving internal review and revision and has not been sent to SHPO for acceptance. In February 2000, while reviewing a Navy housing proposal, the SHPO recommended the inclusion of the northern half of the Victory Homes Site into the Victory Homes Historic District. This part of the site includes 22 row houses, which would increase the number of historic resources in the district to 108 buildings. The ICRMP has not yet been updated to reflect this change. Neither EOD DTR site is visible from the Victory Homes Historic District.

The Navy also completed an archeological resources assessment and protection plan of the Seaplane Base in 1997, which located three previously recorded sites and documented one newly discovered site and two isolated finds, for a total of six archeological resources (Department of the Navy 1997b). Surveyors were unable to relocate one other previously recorded site. The archeological resources assessment also identified areas with high

probability to contain archeological resources. Both alternative DTR sites are near mapped archaeologically sensitive areas. These sites and sensitive areas are not shown in this report to protect the archeological resources that may be present.

The Navy is in the process of identifying studies needed to determine if TCPs are present on NASWI. No TCPs have been identified previously on NASWI.

One historic site was identified by the Navy on the western side of Polnell Point at 60 to 80 ft (18 to 24 m) above sea level. The site appears to contain the remains of a log and metal bunker possibly used for ordnance disposal (HRA undated). This site was determined to be not eligible for listing on the National Register of Historic Places.

Both of the EOD DTR alternative sites are located approximately 4 miles (6.4 km) from the nearest NRHP-eligible historic resources – the proposed Seaplane Base and Victory Homes historic districts. These districts are considered historically significant at the local, state, and national levels. It is nationally significant for its role in the rapid development of defense installations just prior to and during World War II (Department of the Navy 1999b).

3.5.2 Environmental Consequences

The following sections discuss potential effects on historic and cultural resources caused by the Proposed Action and the No Action Alternative.

3.5.2.1 Proposed Action

Impacts from the Proposed Action could result from construction and operation of the DTR, as discussed in the following sections.

Construction Impacts

Polnell Point Alternative

Development and use of Polnell Point for an EOD DTR would require grading of a road across the isthmus to the training range site (ROC, Petersen, 11/5/99). Construction of the road and the EOD DTR site itself would likely require some degree of grading, which could disturb archeological sites and the surrounding archeological sensitive area in general. Because the Polnell Point Site is located in an identified archeological sensitive area, the mitigation measures listed in Section 3.5.3 would apply.

Terrace Site Alternative

Because this site has an existing access road and the DTR range itself would be located on a previously constructed terrace, no disturbance to previously undisturbed areas are likely to occur. It is possible (although unlikely) that previously unidentified sub-surface archeologically significant artifacts may be present that could be disturbed or damaged through construction activities. Because the Terrace Site is located in an identified archeological sensitive area, the mitigation measures listed in Section 3.5.3 would apply.

Operation Impacts

Polnell Point Alternative

Once operational, no additional direct effects to archeological resources are anticipated from use of this site. The proposed EOD DTR sites is several miles from the proposed Seaplane Base Historic District (Historic District) but would be potentially visible from parts of the Historic District. Given the distance, vegetative screening, and lack of significant construction, no adverse effects to the district's historic resources would result. Detonations may be audible under certain wind conditions, but are not likely to result in smoke plumes that would be visible from the historic district. Because the ordnance used is non-fragmenting, no disturbance of sub-surface materials is expected.

Terrace Site Alternative

Potential effects associated with the Terrace Site Alternative would be the same as the Polnell Point Alternative. However, there is more forest between the DTR site and the Historic District that would further reduce visual impacts (Section 3.6).

3.5.2.2 No Action Alternative

Under the No Action Alternative, no impacts to historical or archeological resources are anticipated.

3.5.3 Mitigation Measures

The mitigation procedures for historic resources listed below are further defined in Section 5.4 of the ICRMP for Naval Station Whidbey Island (Department of the Navy 1999b). The ICRMP contains Standard Operating Procedures for protection of historic and archeological resources potentially encountered during construction or operation of the Proposed Action.

- HCR-1 Construction activities within archaeological sensitive areas should be monitored by a qualified archaeologist.
- HCR-2 In the case of the discovery of archeological evidence of previous human occupation (including the discovery of human remains) during construction or any other activity, the Navy will follow these procedures:
- Stop work in area of discovery and protect discovery from potential damage. Any human remains should be left undisturbed to ensure consistency with NAGPRA.
 - Notify the National Park Service, Department Consulting Archeologist (DCA), at (907) 257-2436. The DCA will, in most situations, arrange for a local professional archeologist to visit the site, usually within 48 hours of notification, to make a determination of whether the discovered material is significant. Notification of the SHPO by phone at this time is also recommended.

- If the DCA's representative determines that the discovery has no significant archeological value (i.e., it is not likely to yield information important in prehistory or history), the SHPO must be notified in writing and given 30 days to comment. Upon receipt of SHPO concurrence, work in the area may proceed.
- If the DCA's representative determines that the discovered archeological resource is significant (i.e., it is likely to yield information important in prehistory or history of the area), the DCA will consult with the Navy and the SHPO to determine appropriate treatment for the discovered resources. The Secretary of the Interior is authorized to pay data recovery and project delay costs by the Archeological and Historic (Data) Preservation Act of 1974, but funds appropriated for this purpose may be insufficient and project funds may have to be used. Project funding for archeological data recovery (if total project cost is over \$50,000) is limited to 1 percent of the total project funding authorization. Additional expenditures require the concurrence of the Secretary of Interior and notification of the Committee on Interior and Insular Affairs of the House of Representatives and the Senate Committee on Energy and Natural Resources.
- Prior to beginning the data recovery work, notify the SHPO of the discovery, its significance, and planned data recovery work and allow the SHPO 30 days to comment. The SHPO should also be involved in the discussions with the DCA. Upon completion of data recovery work, the Navy or other owner should provide the Advisory Council on Historic Preservation (ACHP) with a report on the work.

3.6 AESTHETIC/VISUAL RESOURCES

This section addresses potential effects of the Proposed Action and No Action Alternative on aesthetics/visual resources in the vicinity of the EOD DTR sites. This assessment was accomplished by considering the views from key viewing locations (i.e., residential areas, main roads, designated vista points or recreational facilities, and the proposed Seaplane Base Historic District).

3.6.1 Affected Environment

Polnell Point is a prominent visual feature visible by water from Maylor Point, the proposed Seaplane Historic District, Crescent Harbor, Penn Cove, Coupville, Saratoga Passage, Utsalady (Camano Island), and Skagit Bay (Figure 2.1-1). Terrestrial views are less dramatic, but the peninsula is visible from parts of downtown Oak Harbor, the Crescent Harbor headlands, and from off-base areas to the north and east including the Scenic Heights neighborhood. The peninsula is a significant visual resource with its mature coniferous forest canopy, dramatic cliffs, and boulder strewn beaches. Unlike most of the coastline in Saratoga Passage, Polnell Point has never been developed and appears pristine. Even the narrow isthmus connecting the point to Whidbey Island appears to its neighbors to be in a relatively natural state even though it is littered with refuse concrete.

Because the Terrace Site consists of a relatively small clearing surrounded by dense coniferous vegetation, it is visible only from the southwest, including the waters of Crescent Harbor and Saratoga Passage. From the water it has the appearance of a moderate sized grass-covered clearing.

3.6.2 Environmental Consequences

Site-specific effects to aesthetic/visual resources are described in the following sections.

3.6.2.1 Proposed Action

Construction Impacts

Polnell Point Alternative

Much of the housing in the vicinity of the Polnell Shores and Passage Point subdivisions has direct views of the peninsula. Construction of a paved road along the top of the Polnell Point isthmus would alter this view considerably both during and after the construction phase. Construction of a graded DTR would also modify views from these subdivisions, but these views would be slightly more oblique as well as partially blocked by surrounding vegetation. Instead of the relatively undisturbed island, views would reveal a sizable clearcut and 0.2 acre (0.1 ha) of unvegetated soil. In addition, the MILVAN (a large metal storage container) and detonation barricades may be visible from several homes.

Terrace Site Alternative

Construction of an EOD DTR at this location would not be visible from surrounding vista points due to intervening vegetation.

Operations Impacts

Polnell Point Alternative

The DTR barricades would be only barely visible from open segments of Pioneer Way. Depending on the type of explosives used and size of the detonation, detonations at this site would generate small (< 100 ft [33 m] tall) plumes of rapidly dissipating white smoke, which would be potentially visible from Pioneer Way, Scenic Heights, and from boats in Crescent Harbor. Since the duration of each plume would be brief, the visual impacts would not be considered significant.

Terrace Site Alternative

The DTR itself would not be visible from any land-based locations. Detonations at this site would also generate plumes of white smoke, but they would be less noticeable than under the Polnell Point Alternative due to background vegetation and because this site is not within close viewing range of any visual receptors. Since the duration of each plume would be brief, the visual impacts would not be considered significant.

3.6.2.2 No Action Alternative

The No Action Alternative would result in no visual impacts. If the EODMU ELEVEN is required to conduct training at another installation, there could be visual impacts at that location. Such potential impacts are not addressed in this EA.

3.6.3 Mitigation Measures

The Proposed Action would result in no adverse visual impacts. Therefore, no mitigation measures are proposed.

3.7 GEOLOGY AND SOILS

This section addresses potential geologic and soil impacts associated with the Proposed Action and No Action Alternative.

3.7.1 Affected Environment

Whidbey Island geology is the result of glacial activity that occurred within the last 1 million years. Glacial and interglacial deposits on Whidbey Island may be up to 3,000 ft (925 m) thick (Jones 1985). The geologic stratigraphy consists primarily of glacial outwash, glacial drift, glaciolacustrine sediments, and glaciofluvial material of the last glaciation, which occurred about 20,000 years ago.

Whidbey Island soils are located on moraines, terraces, and terrace escarpments. The soils were formed from materials weathered from the glacial activity. Twenty-three soil mapping units, comprising 14 soil series, occur at the Seaplane Base (Department of the Navy 1996a). The soils in the area of the Proposed Action are predominantly in the glacial upland type called Hoypus Gravelly Loamy Sand (Hf), with 5 to 15 percent slope (Department of the Navy 1996a). This soil series is excessively drained. The Polnell Point site is immediately upslope of a band of Coastal Beach (Ch) soil type along the shoreline. The Terrace Site is 100 ft (31 m) upslope of a bluff at the bottom of which is also a band of Coastal Beach soil type.

There is no evidence of soil contamination at either of the proposed sites. There are, however, unconfirmed reports of unidentified ordnance (which could range from used shell casings to actual unexploded ordnance) on Polnell Point.

3.7.2 Environmental Consequences

The following sections discuss the construction and operation impacts associated with the Proposed Action and No Action Alternative.

3.7.2.1 Proposed Action

The following sections discuss the geology and soils impacts from the two Proposed Action alternatives.

Polnell Point Alternative

Construction of the EOD DTR at the Polnell Point Site would directly impact soils at the site by the disturbance and re-grading of approximately 0.2 acre (0.1 ha) of ground at the site and 2,000 ft (620 m) of access road on the isthmus. This disturbance would take place over a 2-week period. During construction periods, the Navy would utilize Best Management Practices (BMPs), as defined by WDOE and Island County, to minimize potential erosion effects. Since the disturbed area would be less than 5 acres (2 ha), no EPA discharge permits would be required. All disturbed areas not within the 50-ft (15 m) radius clear zone

would be revegetated with native plant species to control erosion. Areas within the clear zone would receive a layer of stone to prevent vegetation encroachment.

Operation of the EOD DTR at Polnell Point would not cause any significant impacts to soil resources. A small amount of sand would be mobilized and deposited within the 1,075-ft (330 m) radius maximum fragmentation arc during each detonation. This is not expected to cause any significant impacts to soils. No contamination of soil is anticipated as the explosives to be used are all non-fragmenting and would not deposit any toxic substances.

Terrace Site Alternative

Construction of the EOD DTR at the Terrace Site would result in similar impacts to soils from ground disturbance as the Polnell Point site for the DTR and would not require road clearing ground disturbances. Similarly, operation of the EOD DTR at the Terrace Site would not cause any significant impacts to the soil resources.

3.7.2.2 No Action Alternative

Under the No Action Alternative, the geology and soils of the two sites would remain undisturbed and continue to function as adequately drained open space. No other effects are expected under the No Action Alternative.

3.7.3 Mitigation Measures

By implementing the following mitigation measures, there would be no adverse effects on geology and soils from construction of either alternative of the Proposed Action:

- GS-1 The Navy contractor will minimize the risk of soil contamination during construction by restricting fueling and equipment maintenance to a designated staging area with an impermeable surface and a spill containment and clean-up kit.
- GS-2 The Navy contractor will implement BMPs, as defined by WDOE and Island County and outlined in the NASWI Integrated Natural Resources Management Plan (INRMP) (Department of the Navy 1996a), to minimize erosion and disturbance during construction.
- GS-3 The Navy contractor will follow the standard vegetation planting practices listed in the INRMP.

3.8 HYDROLOGY AND WATER QUALITY

This section addresses potential hydrologic and water quality impacts associated with the Proposed Action and No Action Alternative.

3.8.1 Affected Environment

Groundwater is the primary source of drinking water on Whidbey Island. EPA has classified the groundwater of Whidbey Island as a sole source aquifer (47 FR 66, 6 April 1987). WDOE has designated Island County as a groundwater management area under WAC 173-100, ranking second in priority within the state. Island County has prepared a Ground Water Management Program (ICGWMP) to guide education, conservation, monitoring, regulation, and coordination efforts. Contamination of groundwater supplies is a major concern within Island County. There are no groundwater wells near either of the Proposed Action alternative sites. The primary source of water for NASWI is the Skagit Pipeline, which transfers water to Whidbey Island from the Skagit River (Department of the Navy 1996a).

Recharge to the groundwater system of Whidbey Island is through infiltrating precipitation. Recharge is highest during the winter and spring when the region receives the majority of its precipitation. Natural discharge from the aquifer occurs year round as a result of groundwater outflow to the surrounding marine waters. Whidbey Island groundwater yields range between 50 and 350 gallons per minute (gpm; 189 and 1,325 liters per minute [lpm]), with most wells yielding less than 100 gpm (379 lpm) (Department of the Navy 1997c). An average of 6 percent of the precipitation percolates to recharge the aquifer, and aquifer recharge is the preferred method for surface water management such as retention basins within the ICGWMP. Water tables generally follow the topography, although perched water tables exist in some locations.

Northern Whidbey Island was identified in the Island County Watershed Ranking Report (Island County 1988) as the top priority regional watershed in the county. This rank is based on existing or potential contributions of nonpoint source pollution to Puget Sound and the sensitivity of the areas receiving discharges (e.g., shellfish beds). The three watersheds with the highest rankings are Oak Harbor/Crescent Harbor, Dugualla Creek, and Penn Cove.

There are no freshwater surface water bodies in the vicinity of either of the Proposed Action alternative sites. The Polnell Point Site is immediately adjacent to the shore of Crescent Harbor. These marine waters have semidiurnal tidal fluctuations averaging approximately 10 ft (3 m) with maximum tides of about 17 ft (5 m) (Evans-Hamilton, Inc. and D.R. Systems, Inc. 1987). The Terrace Site is approximately 100 ft (30 m) upslope of the top of a 100-ft-tall (30 m) bluff above Crescent Harbor.

Surface water runoff on Whidbey Island occurs from precipitation on soils with low infiltration rates. The soils at the proposed sites have good drainage, therefore, there is no surface runoff from either area.

3.8.2 Environmental Consequences

The following sections discuss the hydrology and water quality impacts of the Proposed Action and the No Action Alternatives.

3.8.2.1 Proposed Action

Construction Impacts

Polnell Point Alternative

Construction of the EOD DTR at Polnell Point would have limited effects on local hydrology and water quality as long as the mitigation measures discussed in Section 3.7.3 are implemented. The primary management goal for surface water at NASWI is to minimize the impacts of erosion, sedimentation, and point and non-point water pollution to bodies of water (Department of the Navy 1996a). During construction, the removal of vegetation and upper soil layers may increase runoff. Some soil might be washed into Crescent Harbor if construction occurs during inclement weather. However, since the construction period is short and site disturbance is limited, these amounts are expected to be negligible.

Terrace Site Alternative

The series of small terraces at the proposed Terrace Site and the large area of grassland downslope of the site would likely minimize runoff and any adverse effects to water quality. The mitigation measures discussed in Section 3.7.3 will be implemented as part of the Proposed Action to protect aquatic resources.

Operation Impacts

Polnell Point Alternative

During operation of the proposed EOD DTR at Polnell Point, a small amount of sand will likely be blown into the nearby water. This sand would have minimal toxic material contamination and is not likely to adversely affect water quality. Since there would be no increase in impervious surface, there should be no increase in runoff caused by the Proposed Action. If the Polnell Point Site is selected, the regular operation of vehicles on the isthmus may increase the risk of oil and gasoline leakage into the water. This potential impact is not expected to be significant, especially if proper vehicle maintenance occurs and vehicular traffic is minimized to the amount necessary to carry out the training.

Terrace Site Alternative

During operation of the proposed EOD DTR at the Terrace Site, a small amount of sand will likely be blown into Crescent Harbor or otherwise washed downslope into the water. This sand would have minimal contamination and is not likely to adversely affect water quality.

Since the Terrace Site is above the bluff, there is little risk of adverse impacts to water resources as long as appropriate BMPs are implemented.

3.8.2.2 No Action Alternative

Under the No Action Alternative, the hydrology and water quality of the Polnell Point and Terrace Sites would remain undisturbed and continue to function as a well-drained development. No other effects at NASWI are expected under the No Action Alternative. There could be adverse effects to water resources at another installation if the EODMU ELEVEN is required to relocate. These impacts are not addressed in this EA.

3.8.3 Mitigation Measures

The Navy will implement mitigation measures GS-1 through GS-3 (Section 3.7.3) to minimize potential effects to hydrology and water quality. The Navy will also acquire a Coastal Zone Consistency Determination in compliance with the Washington CZMP.

3.9 VEGETATION, FISH, AND WILDLIFE RESOURCES

This section addresses potential vegetation, fish, and wildlife resources impacts associated with the Proposed Action and No Action Alternative.

3.9.1 Affected Environment

The following sections describe the vegetation, fish, and wildlife resources in the project vicinity of the Proposed Action, as well as potential impacts associated with the two Proposed Action alternatives and the No Action Alternative.

3.9.1.1 Vegetation

Whidbey Island is in the western hemlock (*Tsuga heterophylla*) Zone (Franklin and Dyrness 1988). The vegetation at the two proposed sites differs considerably. The Polnell Point site is classified as “scrub-shrub” in the Integrated Natural Resources Management Plan (INRMP) (Department of the Navy 1996a) and is currently dominated by dense alder (*Alnus rubra*), Himalayan blackberry (*Rubus discolor*), wild rose (*Rosa* sp.), and willow (*Salix* spp.) shrubs and sapling Douglas-fir (*Pseudotsuga menziensis*) trees, along with various early successional grasses and forbs that colonized the site after detonation training ceased in the early 1980s. Scrub-shrub comprises 7.5 percent of the Seaplane Base (Department of the Navy 1996a). The entire Polnell Point shoreline is ringed by regularly flooded estuarine intertidal unconsolidated shore habitat (Cowardin et al. 1979). For the most part, the beaches in this area are Rocky/Cobble or Cobble/Sand. Beach habitat, along with eroding bluffs, dominate most of the Crescent Harbor and Polnell Point shoreline (Department of the Navy 1996). Subtidal marine habitat occurs throughout Crescent Harbor. There are no significant plant communities or potential habitat for threatened, endangered, or sensitive (TES) plant species near Polnell Point (Department of the Navy 1996).

The Terrace Site is in an area classified as “grassland” in the INRMP (Department of the Navy 1996a) and is dominated by various grass species—clover (*Trifolium* spp.), Canada thistle (*Cirsium arvense*), and annual weeds. Grassland/agricultural land comprises the largest component of vegetative cover on the Seaplane Base (26 percent) (Department of the Navy 1996). The site is surrounded on three sides by Douglas-fir forest; a steep bluff occurs south of the site between the Crescent Harbor Road and the shoreline. The entire area is actively used for DoD training and is regularly subjected to trampling by personnel and equipment.

3.9.1.2 Wildlife

There are approximately 60 water birds and shorebirds, 83 land-based bird species, and 17 terrestrial mammals that are common at NASWI; 5 reptile and 9 amphibian species also potentially occur at NASWI (Department of the Navy 1996). Of the habitats present on the Seaplane Base, the marine subtidal habitat provides habitat for 207 wildlife species, the

greatest number of species for any habitat (Department of the Navy 1996). This is followed by beach habitats that support between 78 and 112 species.

Scrub-shrub habitat, such as that present at the proposed Polnell Point Site, potentially supports 58 species of animals, while grasslands like those at the Terrace Site potentially support 100 species (Department of the Navy 1996). The beach and marine subtidal habitat bordering Crescent Harbor and surrounding Polnell Point are important for marine waterbirds and mammals. In particular, the zone within several hundred feet of Polnell Point receives substantial use by resting waterfowl and seabirds, as the isthmus provides protection from wind and rough seas. This zone is also relatively shallow and provides foraging habitat for numerous birds and pinnipeds (e.g., seals [*Phoca vitulina*]).

Mammal species that commonly occur in the waters along Crescent Harbor include: harbor seal, river otter (*Lutra canadensis*), and California sea lion (*Zalophus californianus*) (Department of the Navy 1996); 10 other marine mammal species, including 8 dolphins, porpoise, and whales, occasionally occur as well. Seals regularly haul out on rocks just off shore (100-200 ft [30 to 61 m]) to the south of the Terrace Site.

The forests surrounding both the Polnell Point and the Terrace Sites likely provide roosting habitat for the four or five species of bats that are known to occur on NASWI. The open grasslands and beach habitats provide excellent foraging habitat for these species.

Discussion of threatened and endangered species and species protected under the Marine Mammal Protection Act (MMPA) is presented in the Section 3.9.1.4.

3.9.1.3 Fish

As many as 125 species of marine fish potentially occur in the waters bordering the Seaplane Base (Department of the Navy 1996). The waters near Polnell Point and in Crescent Harbor do not contain any particularly significant marine habitats for fish species, such as nursery habitats. There are no freshwater systems with fish in the vicinity of the Proposed Action.

3.9.1.4 Threatened and Endangered Plant and Wildlife Species

This section discusses the fish and wildlife species that are listed or proposed for listing under the Endangered Species Act (ESA) or are otherwise protected by the Marine Mammal Protection Act (MMPA).

One salmonid, two marine mammal, two bird, and one sea turtle species that are listed or proposed for listing under the ESA are known to occur or potentially occur in the vicinity of the Proposed Action (Table 3.9-1). The following sections summarize occurrence and habitat use information for each of these species.

Table 3.9-1: Species listed or proposed for listing under the Endangered Species Act that may occur in the project area.

Species	ESA Status	Responsible Agency
Puget Sound ESU of Chinook Salmon (<i>Onchorynchus tshawytscha</i>)	Threatened	NMFS
Steller Sea Lion (<i>Eumetopias jubatus</i>)	Threatened	NMFS
Humpback Whale (<i>Megaptera novaeangliae</i>)	Endangered	NMFS
Leatherback Sea Turtle (<i>Dermochelys coriacea</i>)	Endangered	NMFS
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Threatened	USFWS
Marbled Murrelet (<i>Brachyramphus marmoratus</i>)	Threatened	USFWS
Source: Department of the Navy 1996a.		

Puget Sound Chinook Salmon

The Puget Sound Evolutionarily Significant Unit (ESU) of chinook salmon (*Onchorynchus tshawytscha*) was listed as “threatened” under the ESA in March 1999 effective May 24 (63 FR 14308; March 24, 1999). The Puget Sound ESU is defined as all runs of chinook salmon flowing into Puget Sound and the Strait of Juan de Fuca (NMFS 1999a).

Chinook salmon fry or fingerlings reside in estuarine areas near their home rivers in spring and early summer, after which they migrate to the open ocean where they spend 3 to 4 years before returning to spawn. Returning adult Puget Sound chinook salmon are present annually in marine waters from mid-May through the end of October.

In-migrating adult salmon tend to be found in the upper 30 ft (9 m) of the water column (WDFW 1999). Out-migrating juvenile Puget Sound chinook salmon are present in marine waters from mid-February through the end of July, primarily in shallow, nearshore areas.

Because there are no tributaries with spawning habitat or significant estuarine habitats in the vicinity of the project, any occurrence of this species is likely to be limited to short-term movement through the area.

Steller Sea Lion

Steller sea lions (*Eumetopias jubatus*) are listed as threatened in most of their range, including Puget Sound. A small population is listed as endangered by the National Marine Fisheries Service (NMFS) (60 FR 51968). Steller sea lions generally move into Puget Sound in the fall, and by midwinter they may number several hundred (Angell and Balcomb 1982). Steller sea lions have been occasionally observed in the waters near NASWI (Department of the Navy 1996a). There are no Steller sea lion breeding sites in Puget Sound or haul-out sites in the project area. This species is expected to occur only rarely in the waters near Whidbey Island.

Humpback Whale

Humpback whales (*Megaptera novaeangliae*) are listed as an endangered species under the ESA and are under the jurisdiction of NMFS. While the species was once common in Puget Sound, humpback whales are now only occasional visitors (Everitt et al. 1980). Every one to two years a humpback whale is sighted in Puget Sound, even as far south as Budd Inlet near Olympia, but these visits to inland water are unusual (ROC, Calambokidis, 1999). It is likely that this species only rarely occurs near NASWI.

Leatherback Sea Turtle

Leatherback sea turtles (*Dermochelys coriacea*) are listed as endangered under the ESA and have protection under Convention on International Trade in Endangered Species (CITES). The species breeds in tropical areas and only occasionally visits the Washington coast. They occasionally enter bays and estuaries. It is highly unlikely that this species occurs, even rarely, in the project vicinity.

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) is federally listed as threatened in Washington. A Pacific Bald Eagle Recovery Plan was published by the U.S. Fish and Wildlife Service (USFWS) in 1986. Eagle populations have since recovered, and USFWS has recently proposed that the bald eagle be delisted (FR, July 6, 1999, Vol 64, No. 128, pp 36453-36464). If delisted under the ESA, the bald eagle would continue to be monitored as part of the delisting process, and they will still be protected under the Bald and Golden Eagle Protection Act. The Navy prepared a Bald Eagle Management Plan (BEMP) to minimize conflicts between eagles and DoD missions at NASWI (Department of the Navy 1996b).

Bald Eagle nests are built in dominant trees, primarily Douglas-fir in the Puget Sound area, within 656 ft (200 m) of open water. Bald eagle territories average 0.4-0.8 square miles (1-2 km²) (Stalmaster 1987) but may be as large as 3.1 square miles (8 km²) in Washington (Grubb 1976). During the winter, bald eagles often congregate in communal roosts during the evening. These sites are chosen for favorable microclimate that protect eagles from harsh weather (Stalmaster 1987).

There are currently four nesting pairs of bald eagles at NASWI, including 3 at the Seaplane Base. One nesting territory occurs on Polnell Point, and the second pair nests near the "Ice House" east-northeast of the sewage treatment plant just north of Crescent Harbor; another pair nested successfully near Forbes Point at the Seaplane Base in 1999. The nesting season generally lasts from January 1 through August 15 each year. During the winter, as many as 9 eagles have been observed perching/foraging along the Crescent Harbor shoreline, where they use trees and human-made structures for perching and make foraging dives for fish and waterfowl.

The Polnell Point territory has been active since at least 1974, although there are no data for 1976 to 1979. During 17 years of productivity monitoring, this territory has produced an average of 0.94 fledglings/year, which is nearly identical to the Pacific States' mean of 0.93

young per occupied territory (Department of the Navy 1996b). The nest was successful in 1999. The eagles using Polnell Point moved their nest in recent years from a tree on the eastern side of Polnell Point to a site that is closer to the northern tip. This movement indicates the importance of the entire forested portion of Polnell Point for maintaining bald eagle nesting over the long term. This nest is approximately 300 ft (91 m) from the Polnell Point Site and approximately 4,500 ft (1,372 m) from the Terrace Site. The Ice House territory was established in 1998 and produced young in 1999. The Ice House nest is located over 10,000 ft (3,048 m) from the Terrace Site and 13,000 ft (3,962 m) from the Polnell Point Site.

There are several regularly used perch sites along the bluff and Crescent Harbor shoreline that are within 1,000 ft (310 m) of the Terrace Site. In addition, a potential winter night roost was identified in the forested portion of the "Survival Area" approximately 1 mile (1.6 km) north of the Terrace Site.

Marbled Murrelet

The marbled murrelet (*Brachyramphus marmoratus*) was listed as a threatened species by USFWS in 1992 due to a high rate of nesting habitat loss and fragmentation, as well as mortality associated with net fisheries and oil spills in marine waters. Marbled murrelets nest in old-growth forest and feed in coastal and inland waters, including Puget Sound. Unlike other seabirds that nest in ground burrows, it is the only seabird that nests in trees. Marbled murrelets are closely associated with old-growth conifer stands (Binford et al. 1975; Carter and Sealy 1987). The nesting season extends from April 1 to September 15.

Marbled murrelets can be found feeding in Puget Sound throughout the year, with larger concentrations during the fall and winter. These birds feed within 1.2 miles (1.9 km) of shore and dive for sand lances (*Ammodytes hexapterus*), sea perch (*Embiotoca lateralis*), other small schooling fish, and crustaceans. Open waters of entrance channels off rocky shores or over reefs are important feeding locations (Angell and Balcomb 1982). Small numbers of marbled murrelets are occasionally seen foraging in waters off of the Seaplane Base, including areas near Polnell Point. There is no suitable nesting habitat in the vicinity of the Proposed Action.

Marine Mammals Protected by the MMPA

In addition to the humpback whale and Steller sea lion, the Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), Dall's porpoise (*Phocoenoides dalli*), harbor porpoise (*Phocoena phocoena*), California sea lion, harbor seal, northern elephant seal (*Mirounga angustirostris*), orca (*Orcinus orca*), minke whale (*Balaenoptera acutorostrata*), gray whale (*Eschrichtius gibbosus*), and short-finned pilot whale (*Globicephala macrorhyncha*) potentially occur in northern Puget Sound and may occur in the waters offshore from the Seaplane Base. Of these species, only the harbor seal and California sea lion are relatively common (Department of the Navy 1996a). Seals occasionally haul out on "Haul-out Rock," located just off shore in Crescent Harbor (100-200 ft [30-61 m]) to the southwest of the Terrace Site. These rocks are only occasionally used by harbor seals when the tides are

between +5.0 and +9.0 ft. At tides higher than +9.0 ft the rocks are awash and not used by marine mammals; at tides lower than +5.0 ft, the rocks are not accessible to harbor seals due to the steep sides. Observations of the haul-out site indicate that harbor seals are present only about 10 percent of the time that tides are within the useable range. Usually, between 1 and 12 seals use the site at one time. No harbor seal pups have ever been observed

3.9.2 Environmental Consequences

3.9.2.1 Proposed Action

Vegetation and wildlife are potentially affected by both construction and operation associated with the Proposed Action, as described below.

Construction Impacts

The following sections discuss the potential construction impacts of the two Proposed Action alternatives.

Polnell Point Alternative

Construction of the proposed EOD DTR would eliminate approximately 0.2 acre (0.1 ha) of scrub-shrub habitat and 2,000 ft (620 m) of overgrowth along the road on the isthmus. These losses would permanently eliminate some wildlife habitat but would not directly affect habitat for any of the TES species. However, the physical presence of workers and the noise resulting from the construction activity may temporarily disturb pinnipeds from their haul-out sites and possibly a small number of murrelets, if present, from the nearby marine foraging habitat along Polnell Point and eastern Crescent Harbor. Harbor seals using "Haul-out Rock" located approximately 4,100 ft (1,250 m) from the Polnell Point Site. The noise levels at the Haul-out site resulting from construction would likely be less than levels that would elicit "alert and startle response". Depending on the season, this disturbance of murrelets could increase energy expenditure and susceptibility to predation and other mortality. Overall, these impacts are not anticipated to be significant due to the species' rarity in the immediate area and availability of other marine habitats nearby.

For bald eagles, the currently active nest site on Polnell Point is within 300 ft (91 m) of the proposed DTR site. Thus, construction is likely to disturb eagles sitting on the nest. However, the pair of eagles would be precluded from perching along the west side of Polnell Point while construction is occurring. This disturbance could reduce viability of eggs and offspring if construction were to occur during the January 1 to August 15 nesting season. Construction between August 16 and December 31 would not affect nesting bald eagles and would only cause short-term disturbance to any wintering eagles in the area.

The zone of disturbance would depend on the equipment used and the number of personnel present. However, it is likely that eagles will avoid an area within approximately 0.25 to 0.5 mile (0.4 to 0.8 km) of the construction activity (Bottorff et al. 1987). This is particularly true since the combination of loud noise, vehicular/machinery traffic, and pedestrian

activities is known to elicit the greatest flight response from bald eagles (Stalmaster 1987; Grubb and King 1991).

The NASWI BEMP, which was developed in consultation with the USFWS and WDFW, indicates that activities should be prohibited within 1,312 ft (400 m) of the Polnell Point nest, and that trees on Polnell Point should be maintained for nesting habitat (Department of the Navy 1996). The USFWS has indicated that the Proposed Action at Polnell Point would significantly disturb the bald eagle (ROC, Jackson, 10/19/99) (Appendix B).

Terrace Site Alternative

Construction at the Terrace Site would eliminate 0.2 acre (0.1 ha) of grassland habitat, reducing habitat for wildlife species that rely on open areas. This loss is not anticipated to be significant due to the abundance of such habitat on NASWI and elsewhere in the Oak Harbor vicinity. As with the Polnell Point Site, construction activities would likely temporarily disturb wildlife. However, given the fact that site is over 100 ft (30 m) from the top of the shoreline bluff, the zone of significant disturbance along the shoreline is likely to be smaller than that related to the Polnell Point Site. Murrelets would likely be displaced from the nearshore zone immediately south of the Terrace Site. Construction occurring when harbor seals are hauled out on the Haul-out Rock, approximately 200 ft (61 m), but out of line-of-sight could elicit "alert and startle response" which could result in disturbance of usage patterns or abandonment of the site. Such disturbance meets the definition of "Level B" harassment found in Section 3, 16 U.S.C 1362 of the MMPA (ROC, Norberg, 6/1/00).

Similarly, bald eagles would be temporarily precluded from perching in trees along the bluff within approximately 0.5 mile (0.8 km). Because the Terrace Site is approximately 1.4 mile (2.3 km) from the Polnell Point nest, construction at this site is not likely to disturb eagles attending the nest or otherwise perching on Polnell Point. If construction takes place in the fall or winter, it is not likely that any bald eagle night roosts would be affected since the nearest known site is over 1 mile (1.6 km) away in the "Survival Area" and all construction would take place during daylight hours.

Operation Impacts

The operation of the DTR would not cause any additional habitat loss but would result in increased vehicular traffic, groups of up to 10 EODMU ELEVEN personnel conducting training activities, and up to 15 impulse noise events (detonations) per week. Depending on weather conditions, training could result in disturbance 5 days per week for short periods of each day or longer periods on fewer days. The Proposed Action would result in peak noise levels of up to 136 dB (unweighted) at a distance of 1,250 ft (381 m) under certain weather conditions. The majority of the noise would be in the 20-50 Hz range. A discussion on existing noise levels in the vicinity and the noise levels predicted to occur during the detonations is presented in Section 3.3 (and Appendix A). The extent to which increased noise and activity would affect wildlife will depend on a number of factors including: time of year, time of day, number of detonations per day and week, TNT equivalence, and

meteorological conditions. The impacts may also vary by species, as hearing differs among wildlife species.

The following is background information on the effects of noise and other sources of disturbance on wildlife. Note that although the following is not an exhaustive review of existing information, there are very little data that specifically addresses detonations. It does, however, provide information on relative susceptibility and consequences of increased noise levels and/or human activities for wildlife.

General Information

Fish and wildlife can be affected to varying degrees by impulse noise and various human activities. Wildlife sometimes can become habituated to "predictable" noises but do not typically tolerate unpredictable noise, especially when the noise is combined with human presence. However, even when animals are habituated, significant physiological effects may still take place. In extreme cases, the cumulative effect of animals being exposed to loud pulses may be Temporary Threshold Shift (TTS), which is a temporary loss of hearing in selected frequency ranges, or even Permanent Threshold Shift (PTS), a permanent loss of hearing. A more likely outcome of exposure to noises is temporary displacement or physiological responses, both of which can be significant. The following summarizes additional information for major species groups.

Fish

Some sonic boom energy reaching the water propagates into the upper water column (Richardson et al. 1995). In general, fish perceive underwater sounds in the frequency range of 50 to 2,000 Hz, with peak sensitivities below 800 Hz (Popper and Carlson 1998; Department of the Navy 1999d). Salmonids only perceive and elicit avoidance responses to low frequency sounds up to approximately 800 Hz, with greatest sensitivity to sounds below 150 Hz.

Mammals

Sound levels above about 90 dB are likely to be adverse to mammals and can cause a startle response (Manci et al. 1988). Sonic booms of 80-89 dBA elicit the greatest response (Jehl and Cooper 1980). Simulated sonic booms within 325 ft (100 m) of nursing sea lions and elephant seals resulted in startle and alert responses but no trampling (Stewart 1982). Low-flying helicopters, humans on foot, sonic booms, and loud boat noises are the most disturbing to pinnipeds. Steller sea lions appear most susceptible to disturbance from boat noise when they are hauled out on land but often approach boats in the water (Richardson et al. 1995). Sea lions in the water tolerate close and frequent approaches by vessels. Harbor seals on shore will move into water in response to boats, vehicles, and hikers.

Birds

Birds show greatest sensitivity to frequencies between 1 and 5 kHz (Manci et al. 1988). The EPA (1971) has indicated that a noise level of 85 dB is required to scare birds (species unknown). Seabirds exposed to 115 to 146 dBA within 325 ft (100 m) flushed but then returned within several minutes (Stewart 1982). There are no known standards for acceptable noise levels for bald eagles. However, a study in the San Juan Islands documented the avoidance of an area within 0.5 mile (0.8 km) of pile driving activities, likely due to a combination of noise and human activities (Bottorff et al. 1987). Ellis (1981) summarized the possible effects of noise on nesting raptors, which include: (1) temporary nest abandonment causing exposure of eggs or young to inclement or severe weather, (2) physiological stress leading to reduced reproductive success, (3) permanent nest abandonment, and (4) death of young due to premature fledging. The degree of disturbance depends on the level of noise the bald eagles are accustomed to; eagles that use areas with higher noise levels may be less susceptible to disturbance than eagles not used to loud noises. However, bald eagles are often disturbed more by pedestrians than vehicles, machinery, or unlocated noises (Stalmaster 1987).

The following sections discuss the potential operation impacts of the two Proposed Action alternatives.

Polnell Point Alternative

It is highly unlikely that detonations at the Polnell Point Site would cause any permanent or temporary hearing loss in wildlife near the site, as wildlife in the vicinity will flee the immediate area prior to detonation due to the activity of EODMU ELEVEN personnel. This displacement would have a similar effect on wildlife as discussed under the Construction Impacts. Animals would likely move at least 0.5 mile (0.8 km) from the site and possibly return after activity decreases. Detonation would result in peak noise levels of approximately 136 dBP at 1,250 ft (380 m) from the DTR, which is four times farther than the distance to the active bald eagle nest. This impulse noise is likely to startle birds and mammals in the vicinity and cause them to either flee or respond physiologically. Conducting up to 15 detonations per week at the site could result in a significant time period each weekday that wildlife would be displaced and/or subject to increased stress. Some level of habituation may occur, but seabirds and pinnipeds would likely avoid the area during the training activity. Demolition occurring when harbor seals are hauled out on the Haul-out Rock, approximately 4,100 ft (1,250 m) from the site could elicit "alert and startle response" which could result in disturbance of usage patterns or abandonment of the site. Such disturbance meets the definition of "Level B" harassment found in Section 3, 16 U.S.C 1362 of the MMPA (ROC, Norberg, 6/1/00). There is virtually no risk of direct injury from detonations as the ordnance is non-fragmenting.

The detonations are likely to cause some noise propagation into the shallow waters adjacent to the DTR site. This could cause similar effects to fish in the area; it is not likely, however, to cause pressure waves sufficient to kill or injure marine mammals, seabirds, or fish. As such, effects to the TES species of fish and marine mammals that only occasionally or rarely occur are not likely to be significant. The small number of marbled murrelets that do use the

area on occasion would likely move away from the area in response to the presence of the EODMU ELEVEN personnel and detonations.

The effect to bald eagles would depend on the time of year the DTR is operated. The combination of increased human activity at Polnell Point and up to 15 detonations per week during the January 1 to August 15 bald eagle nesting season could result in nest abandonment, reduced productivity or increased egg/nestling mortality due to the parents being flushed from the nest, reduced hunting success, and/or greater stress levels. The NASWI BEMP, which was developed in consultation with the USFWS and WDFW, indicates that activities should be prohibited within 1,312 ft (400 m) of the nest (Department of the Navy 1996b). The USFWS has indicated that effects to bald eagles at Polnell Point would likely be significant (ROC, Jackson, 10/19/99) (Appendix B). Outside of the nesting season, DTR operation at Polnell Point would preclude wintering bald eagles from perching and foraging within at least 0.5 mile (0.8 km) of the Polnell Point Site and could reduce survivability of wintering eagles.

Terrace Site Alternative

The Terrace Site would also cause a temporary displacement of wildlife from the immediate vicinity, including sections of the Crescent Harbor shoreline. However, because the site is above the bluff and generally surrounded by trees, it is possible that there would be less effect on wildlife using Crescent Harbor, the shoreline below the bluff, and Polnell Point since the DTR would not be in a direct line-of-sight. The Terrace Site is less likely to cause noise propagation into the shallow water of Crescent Harbor, and is therefore less likely to affect seabirds, fish, and marine mammals, including seals using the Seal Haul-out Rock in Crescent Harbor.

Detonations occurring when harbor seals are hauled out on the Haul-out Rock, approximately 200 ft (61 m), but out of line-of-sight could elicit "alert and startle response" which could result in disturbance of usage patterns or abandonment of the site. Such disturbance meets the definition of "Level B" harassment found in Section 3, 16 U.S.C 1362 of the MMPA (ROC, Norberg, 6/1/00). There is virtually no risk of direct injury from detonations as the ordnance is non-fragmenting.

None of the TES species would be significantly affected, except that a small amount of bald eagle perching habitat along and below the bluff within about 0.5 mile (0.8 km) of the Terrace Site would likely be avoided during DTR activities. The eagles nesting at Polnell Point would likely hear the detonation noise. However, because the on-the-ground human activity would be well out of sight from the nest and the peak noise would be less than from the Polnell Point Alternative, the Terrace Site Alternative is less likely to cause significant adverse effects to bald eagles. The USFWS has indicated that siting the DTR at this location would not disturb bald eagles at Polnell Point (ROC, Jackson, 5/1/00) (Appendix B).

3.9.2.2 No Action Alternative

The No Action Alternative would not affect vegetation, fish, or wildlife resources at NASWI. Such a relocation would not be compatible with EODMU ELEVEN's training mission requirements.

3.9.3 Mitigation Measures

Under the Polnell Point Alternative, no mitigation measures would adequately minimize impacts to bald eagles. Potential impacts resulting from relocating the DTR to the Terrace Site would be minimized by implementing the following mitigation measures:

- VWR-1 The area disturbed during construction will be minimized, all trees outside of the 50-ft (15 m) radius clear zone will be maintained, and temporarily disturbed surface areas will be revegetated with native plant species beneficial for wildlife following guidelines in the INRMP.
- VWR-2 During construction and operation activities, the Navy will monitor bald eagle behavior and reproductive success at the Seaplane Base in coordination with the USFWS and WDFW.
- VWR-3 DTR standard operations would include wildlife monitoring and reporting to agencies including WDFW, NMFS, and USFWS. This monitoring will be supervised by the NASWI Environmental Affairs Department.
- VWR-4 Demolition training will not occur when marine mammals are present on the "Haul-out Rocks" located just offshore from the Terrace Site.

Impacts to nesting bald eagles could be eliminated if detonations were limited to the August 16 to December 31 time period. However, this would not be compatible with the training requirements of the EODMU ELEVEN.

Mitigation of construction effects on vegetation and wildlife resources will also be accomplished by implementation of mitigation measures GS-1 through GS-3 (Section 3.7.3).

3.10 ENVIRONMENTAL HEALTH HAZARDS

This section addresses potential environmental health hazards associated with the Proposed Action and No Action Alternatives, particularly health hazards to children.

Executive Order 13045, dated April 21, 1997, requires that federal agencies "shall make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks." The only issues requiring discussion of the potential for disproportionate effects on children are noise and hazardous materials.

3.10.1 Affected Environment

The Proposed Action would occur within a secured area of NASWI that is not open to the public. No public access is permitted in the areas of the Seaplane Base where the Proposed Action would occur. A small amount of hunting does occur in the fields east of Crescent Harbor housing complex. Adults do the majority of this hunting on weekends. The nearest school at Crescent Harbor housing complex is 2 miles (3.2 km) away from either site. The Crescent Harbor housing complex and the Polnell Shores/Scenic Heights neighborhoods (approximately 0.4 mile [0.6 km] from the alternative sites) would tend to have children present outdoors during daytime hours.

3.10.2 Environmental Consequences

3.10.2.1 Proposed Action

The fact that children living in the Crescent Harbor and Polnell Shores/Scenic Heights neighborhoods are more likely to be outside during the daytime hours could increase their exposure to detonation noise. As long as detonations occur during favorable meteorological conditions, no adverse physiological effects are anticipated. The acceptable meteorological conditions under which detonations would occur at the Terrace Site are presented in Table 3.3-8. The Polnell Point Alternative provides significantly less opportunity for detonations of 4- and 5-lb (1.8 and 2.3 kg) explosives due to the increased noise transmission over water (see Section 3.3.2). There should be no adverse effects to environmental health from hazardous materials. This conclusion is based on the following: (1) the proposed DTR sites are over 2,000 ft (620 m) from residential and recreational use areas, which is greater than the maximum worst-case fragmentation arc of approximately 1,075 ft (328 m); (2) no fragment-producing explosives will be used; (3) air quality impacts will be limited to the immediate detonation point, and any pollutant will be dissipated by the time it reaches populated areas and areas with children; (4) the potential EOD DTR sites are within a secured area of NASWI that prohibits public access at all times; and (5) no schools are near the Proposed Action.

3.10.2.2 No Action

Under the No Action Alternative, no new DTR would be constructed at NASWI. The anticipated reactivation of ordnance magazines 444/445 at the Seaplane Base would cause the EODMU ELEVEN to relocate its training activity to another installation (memo from NASWI Weapons Officer, April 17, 2000). Although not specifically assessed in this EA, it is unlikely that conducting training at another installation would result in any adverse impacts to public health, particularly to children.

3.10.3 Mitigation Measures

Mitigation measures N-1 through N-3 (Section 3.3.3) would be implemented by NASWI as part of the Navy's compliance with Executive Order 13045 and NEPA to minimize noise levels experienced by the public (see Section 3.3.3).

3.11 ENVIRONMENTAL JUSTICE

This section addresses potential environmental justice issues associated with the Proposed Action and No Action Alternative.

3.11.1 Affected Environment

In February 1994, the President issued Executive Order 12898 that requires all federal agencies to seek to achieve environmental justice by "identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations" (Executive Order 12898). The DoD followed in March 1995 with its Strategy on Environmental Justice to meet the intent of Executive Order 12898, which the EPA approved in April 1995.

The Navy established policies and assigned responsibilities with the goal of preventing disproportionately high and adverse human or environmental effects on minority and low-income populations. The strategy states that DoD would use NEPA as the primary mechanism to implement the provisions of the Executive Order. In response to this strategy, the Navy is making this EA available to state and local governments, the Swinomish and Samish Tribes, and other organizations so that possible concerns about the potential effects of the Proposed Action can be expressed.

Island County exhibits a lower percentage of racial and ethnic minorities (other than Hispanic) than Washington State as a whole. Compared to the nation as a whole, Island County has a lower percentage of Blacks and Hispanics. Approximately 23 percent of the population is composed of males between 20 and 23 years of age (Department of the Navy 1988). Demographic data for Island County are presented in Table 3.11-1.

The proposed sites are near existing residences but not near a predominantly minority or low-income community.

Table 3.11-1: Island County 1990 population characteristics.

Race/ Ethnicity	Island County		Washington State		United States	
	Number	Percent	Number	Percent	Number	Percent
White	55,093	89.7%	4,308,937	88.5%	199,686,070	80.3%
Black	1,552	2.5%	149,801	3.1%	29,986,060	12.1%
Native American	536	0.9%	81,483	1.7%	1,959,234	0.8%
Asian/ Pacific Islander	2,397	3.9%	210,958	4.3%	7,273,662	2.9%
Hispanic (any race)	1,855	3.0%	115,513	2.4%	9,804,847	3.9%
Total	61,433	100.0%	4,866,692	100.0%	248,709,873	100.0%
Source: U.S. Bureau of the Census 1992						

3.11.2 Environmental Consequences

3.11.2.1 Proposed Action

Construction Impacts

Construction of the proposed Navy EOD DTR at either site would have no effect on minority or low income communities, including Native American Tribes.

Operation Impacts

No significant increases in pollution or health risks are anticipated at either site as a result of the Proposed Action.

3.11.2.2 No Action Alternative

The No Action Alternative would have no effect on environmental justice.

3.11.3 Mitigation Measures

By implementing the following mitigation measure, the Navy would comply with Executive Order 12898 and NEPA:

- EJ-1 The Navy will distribute this EA in compliance with Executive Order 12898 and NEPA to the Swinomish and Samish Tribes to ensure that these minority groups receive adequate information concerning the Proposed Action. Requests from any minority or ethnic groups or organizations for information and/or copies of this EA will be met in a timely manner by the Navy.

3.12 ENVIRONMENTAL RESOURCES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

Five resource topics related to the Proposed Action and No Action Alternative were found to have no, minimal, or negligible effects and are briefly discussed below.

3.12.1 Wetlands

The National Wetlands Inventory (NWI) has identified estuarine wetlands along the shorelines in the western portion of the Seaplane Base; the NASWI INRMP identifies the rocky beaches along Crescent Harbor as "wetlands" (Department of the Navy 1996a). The Proposed Action would not affect any wetland resources. The potential for off-site effects would be minimized by implementation of mitigation measures GS-1 through GS-3 (Section 3.7.3).

The No Action Alternative would not affect wetland resources at the Seaplane Base.

As no significant impacts are anticipated, no mitigation measures are required as part of the Proposed Action or No Action Alternative.

3.12.2 Socioeconomics

Island County estimates the 1999 permanent population of Island County's north Whidbey Island planning unit, which encompasses most of NASWI and all of the Seaplane Base, to be 39,100 persons. The State Office of Financial Management's (OFM) projects this to rise to 41,800 by 2000 and up to 57,500 by the year 2020 (City of Oak Harbor 1998b). Most of the population of this area lives in the City of Oak Harbor and in military housing at NASWI. OFM estimated the 1999 City of Oak Harbor population to be 12,830 persons (ROC, Burdette, 11/3/99). The NASWI population as of April 1996 was 5,051 (Department of the Navy 1999c).

In 1999, there were an estimated 16,143 employment opportunities in the north Whidbey Island planning unit. Employment in this region is forecasted by OFM to grow by 1,185 jobs by the year 2000 and another 5,522 jobs by 2020 (ROC, Tate, 11/4/99). Most jobs on north Whidbey Island are associated with NASWI. Other significant employment sectors include government, service, and retail, with most jobs occurring in or near the City of Oak Harbor.

The Proposed Action would not alter local employment or population. The No Action Alternative would indirectly impact socioeconomic conditions of the area by decreasing the Naval readiness of EODMU ELEVEN. If EOD training were forced to relocate to another facility, a minor reduction in staffing could have a very minor corresponding effect on local population associated socioeconomic conditions.

3.12.3 Public Services

Public services examined in this EA include law enforcement, fire protection, emergency spill response, emergency medical, and solid waste handling.

The NASWI Security Police are responsible for all law enforcement on a 24-hour basis at NASWI, including the existing and proposed EOD DTR sites. Law enforcement in the nearby City of Oak Harbor is provided by the Oak Harbor Police Department. The North Precinct of the Island County Sheriff's Department, located at 6th and Main Streets in Coupeville, is responsible for law enforcement in unincorporated portions of Island County from south of Coupeville to Deception Pass. There are 35 Deputies and 1 Sheriff, or approximately 0.6 officer/1,000 residents in the Island County Sheriff's Department that patrol Whidbey and Camano islands. The Washington State Patrol is responsible for patrolling the State Route 20 corridor.

Fire protection and emergency medical services on Navy property would be provided by the NASWI Fire Department from a station located just west of the Navy's Morale, Welfare, and Recreation (MWR) Marina near the intersection of Coral Sea Avenue and Tulage Avenue. In the case of fire at the EOD DTR site, the Navy may be assisted by the Island County Fire District and/or the City of Oak Harbor through a mutual aid agreement (ROC, Buehn, 11/4/99). The nearest non-military fire station is Polnell Fire Protection District (FPD) #2, an unstaffed outlying station with one pumper truck located just outside the southeast gate at the intersection of Polnell and Reservation Roads.

Emergency medical services are provided by NASWI emergency medical technicians and ambulatory services. A Navy hospital is located near Saratoga Street at Ault Field, approximately 6 miles (10 km) from the proposed site. Whidbey General Hospital, 11 miles (18 km) south of the proposed site in the town of Coupeville, is the nearest non-military emergency medical facility.

Prior to use of the range, EODMU ELEVEN notifies appropriate safety agencies as required by Standard Operating Procedures. Whenever the range is in operation, one or more explosive technicians are assigned Safety Officer duty. In the event of an injury, fire, or other accident, the Safety Officer would respond and file an incident report; however, no incidents related to EOD Range Operations have occurred to date at NASWI (ROC, Sweeny, 11/24/99)

Solid waste management and recycling on the base are handled by the NASWI Public Works Department, with waste hauled off the island to approved landfills.

Neither the Proposed Action nor the No Action Alternative would significantly affect public services in the area. Public services would still continue to be needed at the current level.

Because there are no significant adverse effects, no mitigation measures are required as part of the Proposed Action or No Action Alternative.

3.12.4 Schools

Schools in the general vicinity of the proposed EOD DTR sites include Skagit Valley Junior College (Whidbey Branch) along East Pioneer Way near the western boundary of NASWI, Olympic View Elementary on 70th Street NE, and Oak Harbor Elementary School on Midway Boulevard. All of these are several miles from the proposed EOD DTR sites. Due to topography and other landscape features, neither site is visible from the schools. Detonations could be audible at these school as discussed in Section 3.3 but not loud enough to impact school operations. The Proposed Action would also not directly affect school enrollment or school facilities needed.

The No Action Alternative could have a very minor effect on school enrollment if EODMU ELEVEN is forced to relocate to another DoD facility. The unit includes approximately 130 staff, including associated civilians and Naval personnel.

As no significant impacts are anticipated, no mitigation measures are required as part of the Proposed Action or No Action Alternative.

3.12.5 Utilities

Private utility companies servicing the Seaplane Base include Puget Sound Energy, Cascade Natural Gas, GTE Telephone, and TCI Cable. Other utilities are provided by the City of Oak Harbor and the NASWI Public Works Department. The Proposed Action would not require any utilities; therefore, no impacts are anticipated and no mitigation is required.

4.0 CUMULATIVE AND LONG-TERM ENVIRONMENTAL EFFECTS

4.1 CUMULATIVE EFFECTS

Cumulative effects are typically defined as two or more individual effects which, when considered together, compound or increase other environmental effects. Cumulative effects can derive from the individual effects of a single project on various resources or the effects of several past, present, and/or future projects on these resources. Thus, cumulative effects can result from individually minor but collectively significant actions taken over a period of time. The only existing and future project with a possibility of contributing to cumulative effects with the Proposed Action is EODMU ELEVEN's expansion of in-water training activities in the eastern portion of Crescent Harbor,

The EODMU ELEVEN regularly conducts in-water training including location and retrieval of dummy explosive ordnance and other activities. These training missions require the use of boats and low-flying helicopters for deploying personnel into the water and actual ordnance retrieval. The Navy is in the process of requesting the establishment of a restricted area in the eastern portion of Crescent Harbor to facilitate this training.

No adverse effects were identified for the Proposed Action for wetlands, socioeconomics, public services, schools, or utilities. Therefore, no cumulative effects are anticipated for these resource topics.

Potential cumulative effects associated with the Proposed Action are discussed below for the following resources: land use; climate and air quality; noise; recreation; cultural resources; aesthetics/visual resources; geology and soils; hydrology and water quality; vegetation, fish, and wildlife resources; environmental health; and environmental justice.

In addition, the No Action Alternative is discussed relative to cumulative effects resulting from no construction of a new EOD DTR at the Seaplane Base, NASWI.

4.1.1 Land Use

The Proposed Action would result in a change of land use, as the proposed project sites would convert existing undeveloped open space (0.2 acre [0.1 ha]) to a developed use. The Proposed Action represents a small but cumulative loss of open space at the Seaplane Base. However, this impact is not considered significant. The Proposed Action would be consistent with the RSIP by placing the EOD DTR in an area classified as "Mission Support."

The No Action Alternative would result in no cumulative land use changes in the project vicinity.

4.1.2 Climate and Air Quality

The Proposed Action would have no significant air quality or climatic effects. No other cumulative effects are anticipated.

Under the No Action Alternative, cumulative air quality impacts in the Whidbey Island area would be reduced slightly as there would be no EOD DTR at NASWI.

4.1.3 Noise

The Proposed Action would not result in substantial increases in noise complaints from nearby residents as long as the mitigation measures described in Section 3.3.3 are implemented. Continued in-water training by EODMU ELEVEN will not cause any significant cumulative adverse effects to residential areas.

Under the No Action Alternative, cumulative effects on noise levels would be reduced slightly since no new EOD DTR would be constructed.

4.1.4 Recreation Resources

The Proposed Action is not expected to have any significant effects to recreation resources as long as the mitigation measures are implemented. Under the No Action Alternative, recreational impacts would still occur as a result on the potential EODMU ELEVEN in-water training range restrictions.

4.1.5 Cultural Resources

The Proposed Action is not expected to have any significant effects on cultural resources. The EODMU ELEVEN in-water training does not affect cultural resources.

The No Action Alternative would have no cumulative cultural resource effects at NASWI.

4.1.6 Aesthetic/Visual Resources

The Proposed Action is not expected to have any significant effects on aesthetic/visual resources. If constructed at Polnell Point, the EOD DTR will be visible from some nearby homes and may also be visible from boats in Crescent Harbor and along East Pioneer Way. The Terrace Site would only be visible from boats. The EODMU ELEVEN in-water training does not affect visual resources.

The No Action Alternative would have no adverse effects on visual resources at NASWI.

4.1.7 Geology and Soils

The Proposed Action would result in the development of approximately 0.2 acre (0.1 ha) of land where soils would be disturbed. The EODMU ELEVEN in-water training does not directly affect geology or soil resources.

The No Action Alternative would result in no negative cumulative effects to soils and geology at the Seaplane Base.

4.1.8 Hydrology and Water Quality

Construction and operation of the proposed EOD DTR would not significantly increase cumulative turbidity of surface water. The EODMU ELEVEN in-water training does not directly affect hydrology and water quality.

The No Action Alternative would result in no cumulative effects to water quality or hydrology.

4.1.9 Vegetation, Fish, and Wildlife Resources

The Terrace Site Alternative of the Proposed Action would have no significant cumulative effects on vegetation or wildlife. However, the Polnell Point Alternative would result in significant effects to bald eagles. If the EODMU ELEVEN concentrates its ongoing in-water training near Polnell Point and eastern Crescent Harbor, pinnipeds and nesting and wintering bald eagles would be further disturbed by boat and helicopter activity. If Navy boats are used during any part of the Proposed Action, any operations in the vicinity will comply with the Marine Mammal Protection Act and guidelines for approaching or harassing marine mammals. Some of these impacts can be minimized by maintaining horizontal and vertical buffers around the nest and haul-out sites.

Under the No Action Alternative, the potential in-water training and lighthouse decommissioning could cause additional cumulative effects to wildlife, including bald eagles.

4.1.10 Environmental Health Hazards

The Proposed Action and the other potential projects would not significantly increase the environmental health hazards to nearby residents, particularly children. No significant cumulative impacts to children or others are anticipated due to hazards associated with explosives or noise.

The No Action Alternative is not expected to have any significant cumulative effects on environmental health related to children or others.

4.1.11 Environmental Justice

The Proposed Action is not expected to have any significant effects on specific minority or low-income communities on Whidbey Island. The other projects would have no cumulative environmental justice effects.

The No Action Alternative is not expected to have any significant cumulative effects on specific minority or low-income communities on Whidbey Island.

4.2 IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF RESOURCES

Construction and operation of the proposed EOD DTR would result in an irretrievable and incremental use of energy and material, although such use is expected to be negligible. The Proposed Action would convert 0.2 acre (0.1 ha) of open space to a developed use. All proposed development would remain on federally managed land.

4.3 RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

The Terrace Site Alternative of the Proposed Action would not significantly alter the manner in which the environment would be used and would not affect the overall biological productivity. The Polnell Point Alternative would potentially reduce productivity of bald eagles.

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6.0 LIST OF PREPARERS AND DISTRIBUTION LIST

6.1 LIST OF PREPARERS

This EA for the EOD DTR at Seaplane Base, NASWI, Washington, was prepared by a multi-disciplinary team managed by the Department of the Navy, Engineering Field Activity Northwest, Poulsbo, Washington. Contributions to the EA were also made by NEXCOM, NASWI Public Works Department, and NASWI Environmental Affairs Department, Oak Harbor, Washington. EDAW, Inc., Seattle, Washington, a consulting firm under contract to the Navy, compiled and prepared the EA document. EDAW, Inc. was assisted by MFG (for noise analysis). Contributions by individuals were subject to revision during product reviews and editing. The following is a list of contributors to this EA.

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6.2 DISTRIBUTION LIST

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Washington State Department of Ecology
Washington State Department of Fish and Wildlife
Washington State Department of Natural Resources

Local Agencies and Organizations

Island County Planning Department
City of Oak Harbor, Planning Department
Oak Harbor Chamber of Commerce
Oak Harbor Library

APPENDIX A

NOISE STUDY

Appendix A Noise Study

Prepared by McCulley, Frick, and Gilman

Affected Environment

Introduction to Noise Descriptors

The decibel (dB) scale is a logarithmic rating system used to describe sound that accounts for the human ear response to a very wide range of sound intensities. People generally cannot detect sound level changes of less than 2 dB in a given noise source. Although differences of 2 or 3 dB can be detected under ideal laboratory situations, they are difficult to discern in an active outdoor noise environment or when the change is gradual. A five decibel change in a given noise source would be expected to be perceived under normal listening conditions and a 10 dB change is perceived as a doubling or halving of the sound level.

Sound levels increase or decrease relative to the distance to the source. Sound levels due to mobile linear sources such as traffic decrease at a rate of 3 to 4.5 dB per doubling of the distance from the road. Sound levels from discrete events or point sources, such as from an explosive event, decrease at 6 dB per doubling of the distance from the activity.

When addressing the effects of noise on people, it may be necessary to consider the frequency response of the human ear. Sound measuring instruments are, therefore, often designed to increase or reduce their sensitivity to certain frequencies. The frequency-weighting most often used to evaluate environmental noise is A-weighting, and measurements from instruments using this system are reported in "A-weighted decibels" or dBA. An alternative frequency weighting system, C-weighting, does not reduce the level of low frequency noise as much as the A-weighting system, so C-weighting is used to describe very loud, low frequency sounds (e.g., explosions). Although low frequency noise is less audible to humans, C-weighting is often used to assess potential annoyance from structural rattling due to the low frequency noise. Measurements from instruments using this system are reported in "C-weighted decibels" or dBC. Noise levels discussed in this report will be either unweighted (dB), A-weighted (dBA), or C-weighted (dBC).

There are a number of ways to describe noise levels, and most consider the duration of the period considered and the level of the sound involved. Noise descriptors also vary depending on if the noise is fairly continuous for long periods of time, or if the noise is produced by a short event.

For discrete short-term events, peak noise levels (unweighted or weighted) or maximum levels (L_{max}) are often used to describe the sound level and potential effects of the noise event. The L_{max} is the maximum sound level, and when recorded by a sound level meter, its magnitude can be affected by the sampling rate of the meter. The peak noise level (or linear peak) is the instantaneous sound level, not subject to sampling rate. This instantaneous peak event is called the unweighted peak when it does not consider a weighting scheme, but some meters are capable of recording this peak using A- or C-weighting.

For a given noise source, factors affecting the sound transmission from the source and the potential noise impact include distance from a source, frequency of the sound, absorbency of the ground surface, the presence or absence of obstructions and their absorbency or reflectivity, and the duration of the sound.

Noise Propagation

Because sound energy spreads as it radiates from a source, its apparent loudness also decreases. For a single source, the sound level decreases at a rate of 6 dBA per doubling of the distance. At a distance, the blast would behave as a point source of noise. Sound loss due to divergence of sound energy is the same for all frequencies, and is independent of any weighting scale used. In the absence of hills or berms, distance is the primary mechanism for decreasing the noise from the site at distant receptors.

The atmosphere absorbs some of the energy in a sound wave traveling through air. The amount of absorption depends on the frequency of the sound and the temperature and relative humidity of the atmosphere. This absorption is normally ignored for short distances, but the effect becomes significant at large distances. Atmospheric absorption has more effect on higher frequencies, and would be less effective at reducing the low-frequency component of the blast noise.

The surfaces over which sound waves travel affect the amount of sound at a distant receptor in a complex manner which has only recently been quantified. In short, hard surfaces such as asphalt or water can reflect energy and increase the sound level at distant receptors. A soft surface tends to absorb sound energy and can produce a reflected wave that interferes with the direct sound wave and actually reduces the sound level expected due to distance. These interactions are commonly referred to as "ground effects." In addition to surface qualities, the magnitude of the ground effect depends on the height of the source and receiver and the frequency of the sound. The intervening terrain between the proposed DTR sites and nearby residential locations would consist primarily of soft ground and/or water.

If a wall or hillside obstructs the line-of-sight between a noise source and receiver, the sound waves must bend (or refract) around the obstruction in order to reach the receiver. At the proposed detonation sites, some intervening terrain would serve as noise barriers that would reduce impacts. An 8-foot high barrier constructed around the demolition site could also serve to reduce impacts at some receptor locations.

Trees are generally poor sound barriers. At frequencies below 1,000 Hz, the attenuation due to trees is due more to the loosening of the soil by their roots (enhancing the ground effect) than to any effectiveness as a barrier. To obtain appreciable attenuation, both very dense vegetation and significant distances are required. Except to the extent that vegetation influences ground effects, noise attenuation by vegetation was ignored in this study.

Sound propagation through the atmosphere is affected by wind and temperature change with height. With a temperature inversion, temperatures at the surface are colder than the temperatures aloft and the atmosphere is said to be stable. This causes sound waves radiating upward to bend back toward the ground, which reduces distance attenuation. Sound traveling downwind also bends downward.

Sound refracts upward when the sound is traveling upwind, or when the atmosphere is unstable. An unstable atmosphere is common on sunny days, when the ground and lower air masses are warmer than the air aloft. The bending of sound waves upward produces a "shadow zone" near the ground, where sound levels are reduced by as much as 20 dB.

Regulatory Overview

Relevant noise criteria for this evaluation include local and federal criteria or guidelines on noise limits.

Island County/Washington State Noise Standards

Island County has not adopted its own noise limits in its County Code. Instead it refers to the noise limits specified in the Washington Administrative Code Chapter 173-60-040 (WAC 173-60). WAC 173-

60 establishes limits on the levels and durations of noise crossing property boundaries. *However*, WAC 173-60-060 specifically exempts sounds from blasting from the maximum permissible levels. Allowable maximum sound levels depend on the Environmental Designation of Noise Abatement (EDNA) of the source of the noise and the EDNA of the receiving property. Generally, lands used for residential uses are considered Class A EDNAs, lands used for commercial uses are considered Class B EDNAs, and industrial lands are Class C EDNAs. The allowable noise level limits, based on A-weighted sound levels, are displayed in Table 1.

Table 1. Washington State Environmental Noise Limits (dBA)

EDNA of Source Property	EDNA of Receiving Property		
	A: Residential Day/Night	B: Commercial	C: Industrial
A: Residential	55/45	57	60
B: Commercial	57/47	60	65
C: Industrial	60/50	65	70
The limitations for noise received in Class A EDNAs are reduced by 10 dBA during nighttime hours (10 p.m. to 7 a.m.).			
Source: WAC 173-60			

The above noise limits can be exceeded for certain periods of time: 5 dBA for no more than 15 minutes in any hour, 10 dBA for no more than 5 minutes of any hour or 15 dBA for no more than 1.5 minutes of any hour. Sometimes these exceptions are described in terms of the percentage of time a certain level is exceeded. For example, L₂₅ represents a sound level that is exceeded 25 percent of the time, or 15 minutes in an hour. Similarly, L_{8.33} and L_{2.5} are the sound levels that are exceeded 5 and 1.5 minutes in an hour, respectively. L₉₀ represents a sound level that is exceeded 90 percent of the time and is usually considered a background sound level.

It is important to note that WAC-173-60-060 specifically exempts sounds from blasting from the maximum permissible levels described above. But even though these limits do not legally apply, it is useful to consider them to provide a perspective on the noise levels that will occur with the proposed action. To accomplish a meaningful comparison, it is helpful to consider the WAC permitted levels in relation to the type and duration of sounds that would occur with blasting. Because the blast events expected to occur with the proposed action would be very loud but of a very short duration and infrequent (15 or fewer each week), the most comparable WAC sound level limit would be the maximum level allowed in any hour (*L_{max}*), which is equivalent to the sound levels displayed in Table 1 plus 15 dBA. For an EDNA C source affecting an EDNA A receiver, the applicable level would be 60 + 15 dBA = 75 dBA. Again, since blast noise is not regulated by State environmental noise limits, it is being provided simply to help give the reader some scale with which to gauge the anticipated noise levels produced by the detonations.

Naval Surface Warfare Center Noise Guidelines

The Naval Surface Warfare Center at Dahlgren, Virginia (NSWC/DL) developed noise guidelines to determine the likelihood of annoyance to nearby residents affected by weapons noise. These guidelines are shown in Table 2, below, and are for peak, unweighted sound levels.

Table 2. NSWCDL Impulse Noise Guidelines (Unweighted)

Predicted Noise Level, dBP	Risk of Complaints
<120	Low risk of noise complaints
121-124	Noise complaints may occur
124-127	Increased risk of noise complaints
>127	Possibility of complaints due to minor structural damage and ear pain.
Source: Sound Intensity Prediction System (SIPS) noise program for NSWCDL; SIPS: Volume I - Reference Manual" (NSWCDD/TR-97/144), Section 7.1, page 26.	

Existing Conditions

The proposed project sites are located in undeveloped portions of the proposed new Explosive Ordnance Detonation (EOD) Disposal Training Range (DTR) at Seaplane Base, Naval Air Station, Whidbey Island (NASWI), Whidbey NAS. Residential properties surround the-proposed DTR to the west, north and east, and Camano Island residents are located approximately two miles to the south over water. The U.S. Navy is the local authority responsible for planning and zoning on the project site and at nearby naval housing. Island County is responsible for other nearby residences in the project vicinity.

MFG measured existing sound levels at four locations in the project area in September 1999. The measurements were taken in consecutive 1-hour intervals over at least 24-hours. Type I and II sound level meters on tripods 5 feet above the ground were used for the measurements; the meters were not attended except during installation and removal of the equipment. The results of the existing sound level measurements and their locations are summarized in **Table 3** and detailed in Attachment A.

Table 3. Existing Sound Level Measurements (dBA)

SLM Location		Range of Levels							Ldn
		Leq	Lmax	Highest Unweighted Peak	L2	L8	L25	L90	
1	Day	45-66	63-94	113	54-75	47-62	40-61	29-57	59
	Night	29-52	44-78	NA	32-58	30-55	29-53	28-49	
2	Day	44-64	61-91	117	50-75	47-66	37-61	24-50	60
	Night	35-57	54-77	113	37-65	31-61	28-56	22-48	
3	Day	43-70	68-95	114	51-81	42-61	37-52	30-45	61
	Night	30-57	41-81	NA	32-67	31-56	30-47	29-41	
4	Day	NA	64-101	118	47-73	43-56	40-51	33-37	NA
	Night	NA	50-81	88	37-69	31-62	28-50	25-32	

NA - Not Available

Notes: Daytime hours are 7 a.m. to 10 p.m. Nighttime hours are 10 p.m. to 7 a.m.
L90 represents a sound level that is exceeded 90 percent of the time and is usually considered a background sound level.

SLM1: Located in back of the residence at 1000 Brokaw Road, adjacent to Camp Grande. This location is representative of residences on Camano Island, directly across from Polnell Point.

SLM2: Located in back of the residence at 2160 Stoney Beach Lane. This location is representative of residences in Mariner's Cove, a private marina and residential development east of the NASWI Seaplane Base on the shoreline of Whidbey Island.

SLM3: Located at a residence in Scenic Heights overlooking Polnell Point. This location is representative of Scenic Heights residences.

SLM4: Located in back of the residence at 1631 Larch Drive in the Crescent Harbor housing of the NASWI Seaplane Base. This location is representative of numerous residences in the housing area.

As shown in Table 3, existing average sound levels at all measurement locations were erratic and had large ranges over both daytime and nighttime hours. Since these locations were fairly isolated from most traffic noise and industrial/commercial facilities, it is likely that the large ranges were due to both weather conditions (the wind speeds increased on September 9th) and to nearby aircraft and watercraft activity. The highest unweighted peak sound levels measured at SLM1, SLM2, SLM3, and SLM4 were 113, 117, 114, and 118 dB, respectively.

Environmental Noise Impacts

Noise impacts related to the proposed Explosive Ordnance Detonation (EOD) Disposal Training Range (DTR) at the NASWI Seaplane Base would be due to construction activities and explosions on the site.

Construction Impacts

Construction of the DTR would consist of removal of vegetation, site grading, and erection of an 8-foot high barrier around the detonation area. Construction activity is exempt from Washington's noise regulations during daytime hours (7 a.m. to 10 p.m.). Construction would be minimal and would be distant from the nearest residences, so no significant construction noise impacts are anticipated.

Operational Impacts

The only noise source associated with operation of the DTR with the potential to cause off-site noise impacts at the nearest sensitive receivers would be the detonation of explosive material. The maximum amount of explosive material proposed for this site would be 5-lb. Net Explosive Weight (NEW) of TNT-equivalent, non-fragment producing materials.

Source Noise Levels

MFG measured sound levels of a detonation of 5-lb of non-fragmenting explosive material in October 1999. The measurements were taken at Fort Lewis, Washington with the assistance of the U.S. Army. The meteorological conditions were calm and cool with no precipitation. Although there had been low clouds and fog earlier in the day, they had largely dissipated by the time of the measurement. The conditions during the measurement would be considered favorable from a noise standpoint.

Sound levels were measured at two distances, 1,250 feet and 3,000 feet. At 1,250 feet, two Larson Davis 820s were used to measure the A-weighted and C-weighted maximum sound levels using impulse response times. The unweighted linear peak was also captured using these two meters. At 3,000 feet, a Larson Davis 2900B real-time analyzer was used to measure blast noise levels and the frequency spectrum of the noise. Using the information from the 2900B, the C-weighted maximum sound level (L_{max} , dBC) was calculated as 35 greater than the A-weighted maximum sound level (L_{max} , dBA) for a 5 lb. explosion at 3,000 feet. In addition to the frequency spectrum and various noise descriptors, the measurement at 3,000 feet also captured the unweighted linear peak caused by the explosion. The measured sound levels are displayed in **Table 4**.

Table 4. 5-lb Explosive Source Noise Levels

Location	Unwght Peak (dB)	C-weighted L_{max} (dBC)	A-weighted L_{max} (dBA)
At 1,250 feet	136	124	99
At 3,000 feet	129	118 ¹	83 ¹

¹ These levels were calculated using the frequency distribution information and the measured unweighted L_{max} with impulse response time.

Additionally, information provided by the Army's Center for Health Promotion and Preventive Medicine (U.S. ACHPPM) was used to calculate sound levels of varying amounts of explosive material. **Table 5** describes the general relationship between weight of explosive and sound levels during various meteorological conditions.

Table 5. Unweighted Peak Sound Levels at 2,500 Feet

Amount of Explosive Material (pounds)	Meteorological Conditions		
	Base	Focus	Max
0.5	123	128	134
2.5	129	133	140
3	130	134	141
4	131	135	142
5	131	136	143
Base - Low winds, clouds, fall & winter, daytime Focus - Low stable clouds, very low winds, nighttime to 2 hr after sunrise, winter & fall Max - Rare, but levels will sometimes occur under extreme conditions			

Environmental Noise Model (ENM)

Noise generated by future blasting associated with the proposed project at NASWI was evaluated using the Environmental Noise Model (RTA, 1996). ENM is a computer program that allows entry of detailed information on the acoustical characteristics of noise sources, intervening topography (including barriers and structures) and meteorological conditions. ENM computes noise levels at selected receiver locations based on the above inputs and internationally accepted noise calculation techniques.

After the noise sources were characterized by the measurements described above, a 3-dimensional map of the site and vicinity were created to enable the ENM model to evaluate effects of distance and topography on noise attenuation. The sound power level based on the blast measurement was assigned to the two proposed DTR locations. ENM was then used to construct topographic cross sections and to evaluate noise impacts in the vicinity of the sites.

The ENM model allows the user to calculate sound levels for any reasonable meteorological condition. In the evaluation of the individual receiving locations, MFG evaluated "favorable" meteorological conditions (calm with a neutral atmosphere of -1°C/100 meters) and "adverse" conditions (a 5 meter/second wind from the source toward the receiver and a thermal gradient of +3°C/100 meters).

Modeling Results

Based on the source noise level data measured at Ft. Lewis, future blast noise levels (both unweighted linear peak and A-weighted L_{max}) were predicted for residential locations near the two proposed DTR sites. These receptor locations are displayed in **Figure 1**. It was assumed that blasts would occur only during daytime hours (7 a.m. to 10 p.m.).

The results of the sound level predictions are displayed in the following tables. **Tables 6 and 7** display the peak and maximum sound levels, respectively.

Table 6. Unweighted Peak Levels (dB)

Meteorological Conditions	Blast Site	Receptors							
		R1	R2	R3	R4	R5	R6	R7	R8
Favorable	Terrace Site	113	107	112	126	126	127	113	112
	Polnell Point	115	112	120	128	127	123	115	113
Adverse	Terrace Site	122	116	124	133	133	129	122	122
	Polnell Point	125	121	130	137	136	137	124	123

Note: Favorable meteorological conditions consist of no wind and lapse or neutral atmosphere (-1 C/100m)
Adverse meteorological conditions consist of 5 m/s wind blowing from the blast site to the receptor and stable atmosphere (+3 C/100m).

Shaded cells indicate peak sound levels greater than 127 dB, which could result in a high potential for noise complaints and a possibility of slight damage.

R1: Nearest Camano Island residences
R2: Mariner's Cove Marina
R3: Near shoreline of Whidbey Island between Scenic Heights and Mariner's Cove
R4: Residence in Scenic Heights, nearest to and overlooking Polnell Point
R5: Resident in Scenic Heights, overlooking Polnell Point
R6: Resident in Scenic Heights, near Gate 24 to NASWI Seaplane Base
R7: Crescent Harbor NAS Housing
R8: Maylor Point House

Under favorable meteorological conditions, many of the residents in the project vicinity would experience peak sound levels under 120 dB, while those closest to the proposed sites would experience peak levels between 120 and 128 dB. NSWC/DL guidelines (Table 2) indicate that peak levels less than 120 dB would result in a low risk of noise complaints but that peak levels greater than 120 dB would result in a greater potential for noise complaints.

With adverse meteorological conditions, peak sound levels at all of the nearest residential receptors would be greater than 120 dB except at Mariner's Cove Marina when the detonation occurs at the Terrace Site. Sound levels greater than 120 dB would produce a risk of noise complaints according to NSWC/DL guidelines. Blast sound levels at several receptors would exceed peak levels of 127 dBA, which would result in a high risk of noise complaints and a potential for causing minor structural damage.

Table 7. A-weighted Maximum Levels (L_{max})

Meteorological Conditions	Blast Site	Receptors							
		R1	R2	R3	R4	R5	R6	R7	R8
Favorable	Terrace Site	63	56	61	75	76	77	63	63
	Polnell Point	66	63	70	79	77	74	66	63
Adverse	Terrace Site	73	65	74	86	85	91	78	73
	Polnell Point	77	72	82	90	89	86	76	74

Notes: Favorable meteorological conditions consist of no wind and lapse or neutral atmosphere (-1 C/100m)
 Adverse meteorological conditions consist of 5 m/s wind blowing from the blast site to the receptor and stable atmosphere (+3 C/100m)

Allowable WAC maximum level is 75 dBA at the residential receptors between 7 a.m. and 10 p.m. The shaded cells in the above table indicate maximum levels that could exceed Washington's allowable levels.

R1: Nearest Camano Island residences
 R2: Mariner's Cove Marina
 R3: Near shoreline of Whidbey Island between Scenic Heights and Mariner's Cove
 R4: Residence in Scenic Heights, nearest to and overlooking Polnell Point
 R5: Resident in Scenic Heights, overlooking Polnell Point
 R6: Resident in Scenic Heights, near Gate 24 to NASWI Seaplane Base
 R7: NASWI On-Base Housing
 R8: Maylor Point House

With either DTR location and under even favorable meteorological conditions, the maximum A-weighted sound level at residences in Scenic Heights would exceed the maximum limit of 75 dBA as specified in WAC 173-60. However, as discussed previously, blast noise is exempt from Washington's noise limits and is being presented simply to allow the reader to gain a perspective on what the potential noise levels represent.

Mitigation

Detonation of 5 lbs NEW TNT at either proposed site during certain meteorological conditions would have the potential to cause significant noise impacts due to a high possibility of noise complaints and potential damage at the nearest residential receptors. Therefore, the following noise mitigation measures were evaluated.

- To greatly reduce the potential for noise complaints and to eliminate the potential for damage, detonations should only be conducted during specific meteorological conditions that take into account the temperature gradient, wind direction and speed, and amount of explosive to be detonated. As part of this noise mitigation measure, detonations at the DTR will follow the meteorological conditions specified in **Table 8**. The new Standard Operating Procedure (SOP) would include a protocol for EOD personnel to contact NASWI meteorologists to confirm weather conditions at the beginning of each day of training. This information will be recorded in a log maintained by the EODMU ELEVEN.

Table 8. DTR Operating Conditions to Limit Off-station Noise Levels to < 120dBP.^{1,2}

General Conditions	Wind Speed/Direction ³	Net Explosive Weight (NEW) Permitted
Sunny spring and summer days April—September (1000—1600 hrs)	≥ 7.5 m/sec—50°--160°, or ≥ 5 m/sec—45°--145°, or ≥ 3 m/sec—70°--125°	Up to 5 lbs
Sunny spring and summer days April—September (0800—2200 hrs)	≥ 7.5 m/sec—45°--170°, or ≥ 5 m/sec—45°--160°, or ≥ 3 m/sec—45°--150°, or ≥ 2 m/sec—35°--135°	Up to 3 lbs
Cloudy spring or summer days (mostly cumulus, no stratoform clouds below 3000 ft.) or fall and winter days with no clouds or mostly cumulus clouds	≥ 7.5 m/sec—25°--180°, or ≥ 3 m/sec—15°--180°, or ≥ 2 m/sec—5°--180°, or < 2 m/sec—0°--200°	Up to 1 lb
Cloudy winter or fall days with stratoform clouds where no “broken” or “overcast” layers are reported below 3,000 ft.	≥ 7.5 m/sec—15°--190°, or ≥ 5 m/sec—5°--170°, or ≥ 3 m/sec—340°--205°, or ≥ 2 m/sec—295°--205°, or < 2 m/sec—0°--360°	Up to 0.5 lb
1 120 dB is threshold of increasing risk of receiving noise complaints from public.		
2 An overriding condition for detonation of any NEW is that no temperature inversion exists below 5,000 ft.		
3 Wind directions are expressed in degrees from magnetic north.		

In addition to decreasing the blast sound levels at nearby residences, community involvement is often the most effective means of decreasing a neighbor’s annoyance with a noise source and any ensuing noise impacts. The following mitigation measures would, therefore, likely decrease the potential of impacts at nearby residences:

- Warn nearby residents of potential detonations, especially at the beginning of the range use. Discuss the expected frequency of occurrence of detonations as well as what the residents may expect to experience (e.g., rattling of windows).
- Conduct a test blast with noise monitoring at which the residents are invited to attend. Have someone on hand to discuss the measured noise levels and what they might mean.
- If possible, give warnings to nearby residents when periods of frequent detonation activity may occur.

Unavoidable Significant Adverse Impacts

If blasts are conducted following the DTR Operating Conditions outlined in **Table 8**, and if the community is educated about the facility use and initially warned prior to detonations, the risk of unavoidable significant adverse impacts with this project would be substantially reduced or eliminated.

References

Pater, 1976, "Noise Abatement Program for Explosive Operations at NSWC/DL", presented at the 17th Explosives Safety Seminar of the DOD Explosives Safety Board.

RTA Software Pty Ltd. 1989. Users Guide for the Environmental Noise Model (ENM). Distributed by Scantek, Inc., 51 Monroe Street, Suite 1606, Rockville, Maryland.

Stewart, Catherine, U.S. Army Center for Health Promotion and Preventive Medicine, personal communication October 1999.

U.S. Army Center for Health Promotion and Preventive Medicine, Environmental Noise Management. January 1998, Aberdeen Proving Ground, MD.

Attachments :
Sound Level Measurement Results

Table A-1: SLM1 – Sound Levels Measured at Camp Grande on Camano Island
(all in dBA unless otherwise noted)

Date	Time	Leq	Lmax	Lmin	Uwpk, dB	L(2)	L(8)	L(25)	L(90)
08Sep99	10:00 AM	45.4	63.4	31.8	0	53.9	49.8	44.3	35.3
08Sep99	11:00 AM	54.9	77.7	35	0	64.3	54.8	48.2	39.1
08Sep99	12:00 PM	65.1	92.6	36.3	110.8	71.5	56.8	51.1	39.9
08Sep99	1:00 PM	58.1	84.2	30.9	108.7	65.3	58.8	50.9	37.8
08Sep99	2:00 PM	52.6	75.4	32.9	108.2	61.7	56	50.2	38.3
08Sep99	3:00 PM	50.7	72.5	31.5	108.7	61.9	52.3	46.1	35.6
08Sep99	4:00 PM	46.6	63.3	32.8	108.2	55.4	51.2	45.9	36.5
08Sep99	5:00 PM	55	78.1	32.2	107.7	66	53	43.1	35.8
08Sep99	6:00 PM	49.5	67.8	36.3	106.5	59.1	54.1	47.5	40.5
08Sep99	7:00 PM	47.5	69.6	30.3	0	56	48.2	43.7	36.3
08Sep99	8:00 PM	50	72	30.6	0	60.2	53.9	46.2	35.5
08Sep99	9:00 PM	46.1	68	27.9	0	55.8	46.8	39.8	29.3
08Sep99	10:00 PM	51.2	77	28.2	0	58.4	51.5	45.6	29.1
08Sep99	11:00 PM	48.8	71	29.7	0	56	52	47.2	35.2
09Sep99	12:00 AM	51.7	77.7	27.6	0	56.8	45.2	36.2	28.2
09Sep99	1:00 AM	34.1	61.1	27.5	0	37.3	30	28.9	27.5
09Sep99	2:00 AM	29.2	54	27.5	0	31.9	30.3	29	27.5
09Sep99	3:00 AM	30.9	44	27.9	0	34.9	32.9	31.3	28.5
09Sep99	4:00 AM	40.3	60.6	30	0	46.8	45.3	41.9	31.8
09Sep99	5:00 AM	48.2	56.2	42.7	0	51.6	50.6	49.3	45.1
09Sep99	6:00 AM	52.3	66.2	44.9	0	55.7	54.5	53.1	49.4
09Sep99	7:00 AM	62	90.1	49.2	107.1	63.4	58	56.3	52.5
09Sep99	8:00 AM	60.2	78.9	53.5	110.8	64	61.8	60.5	57.3
09Sep99	9:00 AM	65.1	90.4	54.8	112.5	74.5	61.8	59.8	56.9
09Sep99	10:00 AM	66.4	94.4	53.1	110	67.5	58.8	57.2	54.8
09Sep99	11:00 AM	59.4	82.4	48.5	0	68.1	57.1	54.8	51.2
09Sep99	12:00 PM	55.9	71.2	53.8	0	59.1	56.9	55.9	54.3

Ldn: 58.5 dBA

**Table A-2: SLM2 – Sound Levels measured at Mariner's Cove Landing
(all in dBA unless otherwise noted)**

Date	Time	Leq	Lmax	Lmin	Uwpk, dB	L(2)	L(8)	L(25)	L(90)
08Sep99	12:00:00	49.7	72.3	29.8	90.3	58.6	51	45.4	34.7
08Sep99	13:00:00	52.6	77.6	30.9	97.9	55.3	49.7	44.7	37.5
08Sep99	14:00:00	56.2	80.5	34	97.2	63.9	51.1	43.6	37.3
08Sep99	15:00:00	49.8	75.2	32	99.8	55.2	48.6	44.4	35.9
08Sep99	16:00:00	44.1	61	34.4	95.5	50.4	47.8	44.9	38
08Sep99	17:00:00	46.6	71.6	33.7	96.3	55.4	49.5	44.6	38.1
08Sep99	18:00:00	48.8	64.2	32.8	85.9	57.4	53.6	48.5	37.3
08Sep99	19:00:00	48.6	72.3	27	90.3	56.3	47.1	42.3	30.1
08Sep99	20:00:00	47.6	71.1	24.3	88.4	56.1	48.3	41.1	28.4
08Sep99	21:00:00	48.3	70.8	22.6	88.4	58.2	49.8	36.5	24.3
08Sep99	22:00:00	53.2	75	23.4	91.9	61	56.5	50.2	26.9
08Sep99	23:00:00	53.5	76.5	23.8	93.2	63.1	48.9	40.6	28.4
09Sep99	00:00:00	52.9	74.5	21	93.2	64.6	52.9	32.1	22.2
09Sep99	01:00:00	41.5	71.7	22.1	90.3	36.9	30.6	27.7	23.3
09Sep99	02:00:00	35.2	53.7	22.7	98.6	45.4	39.7	32	24
09Sep99	03:00:00	49.7	66.9	28.7	107.9	57.5	54.1	50.3	37
09Sep99	04:00:00	49.5	64.6	32.6	106.1	56.8	53.8	50.4	39.6
09Sep99	05:00:00	55.9	75.2	38.4	112.9	63.4	59.9	56.2	46.4
09Sep99	06:00:00	56.6	76.2	44.1	112.5	64.6	60.5	56.3	48.2
09Sep99	07:00:00	61.6	79.5	44.9	117.3	70.3	66.3	61.3	49.8
09Sep99	08:00:00	59.7	77.8	46.3	115	68.2	63.9	59.5	49.8
09Sep99	09:00:00	60.4	85.5	45.2	112.9	69	62.5	57.2	49.1
09Sep99	10:00:00	61.4	91.2	38.9	110.8	70.9	58.5	53.1	43.5
09Sep99	11:00:00	63.9	89.4	38.3	110.3	74.9	59.3	51.9	41.8
09Sep99	12:00:00	50	69	35.5	108.8	58.2	53.9	49.4	40

Ldn: 60.2 dBA

**Table A-3: SLM3 – Sound Levels Measured at Scenic Heights
(all in dBA unless otherwise noted)**

Date	Time	Leq	Lmax	Lmin	Uwpk, dB	L(2)	L(8)	L(25)	L(90)
08Sep99	12:00:00	52.8	79.4	32.4	108.2	60	54	47.4	34.8
08Sep99	13:00:00	48.7	70.4	32.1	107.7	57.6	53.1	46.8	34.9
08Sep99	14:00:00	58.6	82.9	31.7	108.2	65.9	55.7	50.3	34.9
08Sep99	15:00:00	43.3	68.1	30.6	107.7	51	41.6	37.3	32
08Sep99	16:00:00	48.3	69.1	30.8	108.2	57.4	53.7	48.6	32.6
08Sep99	17:00:00	49.3	72.9	31.1	107.7	59.7	54.6	42.5	33
08Sep99	18:00:00	48.8	68.1	30.7	107.7	59.4	52.2	45.3	32
08Sep99	19:00:00	45.6	68.9	29.7	107.7	56.3	48.3	42	31.2
08Sep99	20:00:00	52.5	77.5	29.5	107.7	61.6	55.4	44.5	30.3
08Sep99	21:00:00	54.8	78	29.4	0	64.5	56.3	40.2	30.2
08Sep99	22:00:00	55.8	77.2	30.1	0	64.8	56.4	47.1	31.7
08Sep99	23:00:00	54.2	80.9	29.7	0	59.7	54.8	46.6	31.1
09Sep99	00:00:00	56.9	77.6	29.1	0	66.9	55	39.2	29.3
09Sep99	01:00:00	51.6	78.5	29	0	45	32.7	31.9	29.4
09Sep99	02:00:00	29.6	43.7	29	0	31.9	30.5	29.8	29.1
09Sep99	03:00:00	30.8	46.7	29.1	0	34.2	32.6	30.8	29.1
09Sep99	04:00:00	30.2	41.1	29.1	0	32.5	31.4	30.5	29.1
09Sep99	05:00:00	35	47.7	30.5	0	41.3	38.9	34.8	31.4
09Sep99	06:00:00	44.1	60.5	38.5	0	50.5	47.4	44	40.8
09Sep99	07:00:00	57.6	80.4	39.9	0	66.4	51.8	48.2	43.3
09Sep99	08:00:00	51.5	70.3	42.3	107.7	58.7	54.3	51.1	45.3
09Sep99	09:00:00	64.6	92.8	41.1	111.6	73.4	60.7	51.7	44.6
09Sep99	10:00:00	67.1	95.3	39.6	113.7	76.9	52	45.3	41.4
09Sep99	11:00:00	70.1	94.4	36.3	112.7	81.2	53.1	43.7	38.1
09Sep99	12:00:00	47.7	71.4	35.8	107.7	56	50.3	45.2	39.2
09Sep99	13:00:00	51.4	78.1	34.5	107.7	55.9	47.8	43.4	36.9

Ldn: 61.5 dBA

**Table A-4: SLM4 – Sound Levels Measured at Crescent Harbor Naval Housing
(all in dBA unless otherwise noted)**

Date	Time	Leq	Lmax	Lmin	Uwpk, dB	L(2)	L(8)	L(25)	L(90)
08Sep99	13:53:00	NA	91	27.5	111	63	55.5	47	34.5
08Sep99	14:53:00	NA	63.5	26.5	93.5	51.5	46.5	41	32.5
08Sep99	15:53:00	NA	76	29.5	93.5	56	45	39.5	33.5
08Sep99	16:53:00	NA	67.5	29	93.5	56	49	43	34
08Sep99	17:53:00	NA	73	28.5	93.5	61.5	55.5	48.5	36.5
08Sep99	18:53:00	NA	78.5	28	93.5	63.5	54.5	46	36.5
08Sep99	19:53:00	NA	79	30.5	93.5	66	56	47.5	37
08Sep99	20:53:00	NA	78.5	26	93.5	70.5	62	50.5	36
08Sep99	15:53:00	NA	78.5	27	93.5	62	55.5	47.5	31.5
08Sep99	15:53:00	NA	80.5	24.5	93.5	70	59.5	50	28.5
08Sep99	23:53:03	NA	79.5	24.5	93.5	68.5	61.5	48.5	27.5
09Sep99	00:53:03	NA	79	22.5	87.5	58	46	32.5	24.5
09Sep99	01:53:03	NA	57.5	23	87.5	36.5	31	28	24.5
09Sep99	02:53:04	NA	50	22.5	87.5	38	32.5	28.5	25
09Sep99	03:53:04	NA	59	23.5	87.5	40.5	34.5	30	26
09Sep99	04:53:04	NA	52.5	24.5	87.5	36.5	34	32	26.5
09Sep99	05:53:05	NA	64	29	87.5	49.5	43.5	37.5	31.5
09Sep99	06:53:05	NA	88	33	103	63.5	47.5	40	35.5
09Sep99	07:53:05	NA	68	33	93.5	47	42.5	40	36
09Sep99	08:53:05	NA	96	34	113	72.5	54	42.5	37
09Sep99	09:53:06	NA	90.5	32	106.5	72	56	42	35.5
09Sep99	10:53:06	NA	101	33.5	117.5	77	55	43	36
09Sep99	11:53:06	NA	86.5	32	103	70	51	42.5	35.5
09Sep99	12:53:07	NA	69.5	31	99.5	57	51	44.5	35.5

Note : No Leq was recorded during the measurement.

APPENDIX B

CORRESPONDENCE



United States Department of the Interior

FISH AND WILDLIFE SERVICE

North Pacific Coast Ecoregion
Western Washington Office
510 Desmond Drive SE, Suite 102
Lacey, Washington 98503
Phone: (360) 753-9440 Fax: (360) 753-9008

K.A. Souders
Department of the Navy
Environmental Affairs
Naval Air Station Whidbey Island
Oak Harbor, Washington 98278

MAY 11 2000

FWS Reference: 91-3-00-TA-0926; Xref:1-3-99-TA-1457

Dear Mr. Souders:

We are providing our comments on the draft Environmental Assessment (EA) for the proposed explosive ordnance demolition training range at the, Whidbey Island Naval Air Station in Island County, Washington. You requested our review and comments in a letter dated March 24, 2000, and received in our office on that same date.

We have reviewed the EA, and support the selection of the Terrace Site as the preferred alternative for the location of the demolition training range. The use of this site will result in minimal impacts to the nesting bald eagles at Polnell Pt., which had been the source of concern for us in our previous review of this project. Selection of the Terrace Site will result in fewer impacts to other wildlife as well. We also support the implementation of the mitigation measures described and are particularly interested in monitoring of bald eagle behavior during ordinance demolition. This would contribute to our knowledge of the effects of noise on bald eagles.

If you have any further questions, please contact John Grettenberger at (360) 753-6044.

Sincerely,

Gerry A. Jackson, Manager
Western Washington Office

cc: WDFW (Region 6, Shelly Ament)

13 MAY 2000

Chromo

24460/41



DEPARTMENT OF THE NAVY

NAVAL AIR STATION WHIDBEY ISLAND
OAK HARBOR, WASHINGTON 98278-5000

5090

Ser N4461:Px/0642

March 24, 2000

Mr. John Grettenberger
U.S. Fish and Wildlife Service
North Pacific Coast Ecoregion
510 Desmond Drive, Suite 102
Lacey, WA 98503

Dear Mr. Grettenberger:

Naval Air Station (NAS), Whidbey Island, requests your review and comment on NAS Whidbey Island's draft Environmental Assessment (EA) for relocating the Explosive Ordnance Disposal Training Range at Crescent Harbor, Whidbey Island (enclosure 1).

The proposed project would construct a demolition training range for use in supporting explosive ordnance disposal missions at NAS Whidbey Island. The preferred site for the training range would be located at a terraced site formerly used by the Whidbey Island Pony Club.

Please provide comments to the draft EA, especially concerning the effects from the proposed action to wildlife resources such as nesting Bald Eagles, by April 7. Please return the EA with any comments to:

Mr. Steve Pennix
Environmental Affairs Department
1155 W. Lexington St. B-113
Oak Harbor, WA 98278

If additional information or review time is required, please contact Mr. Steve Pennix, Environmental Affairs Department, at (360) 257-8873, or via e-mail at penixs@naswi.navy.mil.

Sincerely,

K. A. SOUDERS
Environmental Affairs Department
By direction of the
Commanding Officer

Enclosure: EA for Demolition Training Range

Blind copy to:
CNRNW (Code 451) (w/o encl)
EFA NW (Code 05EP) (w/o encl)



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Sustainable Fisheries Division
7600 Sand Point Way N.E., Bldg. #1
Seattle, Washington 98115-0070

June 1, 2000

1514-07

Mr. Steve Pennix
Naval Air Station Whidbey Island
Environmental Affairs Department
1155 W. Lexington Street B-113
Oak Harbor, WA 98278

Dear Mr. Pennix:

I was forwarded a copy of your letter of March 24, 2000, and asked to provide comments on the draft Environmental Assessment (EA) for relocating the Explosive Ordinance Disposal-Detonation Training Range (EOD-DTR) at Crescent Harbor, Whidbey Island, Washington. I have reviewed the draft in regard to potential effects of the proposed action on harbor seals (Phoca vitulina) that use nearby haul-out rocks in the project area. Based on my review, it appears that operational noise from the proposed EOD-DTR, could elicit repeated startle responses from harbor seals at "Haul-out Rock" which may result in the disturbance of usage patterns or abandonment of the site. Such disturbance would fall within the definition of "Level B" harassment, found in Section 3 (16 U.S.C. 1362) of the Marine Mammal Protection Act (MMPA), and would require an Small Take Authorization as outlined under Title I, Section 101 (16 U.S.C. 1371) of the MMPA.

Small Take Authorizations are issued, through an established public review process, by our headquarters, Office of Protected Resources, Marine Mammal Division. The Division contact for questions regarding the application process is Ken Hollingshead at 301-713-2322 x128. From the information provided in the EA, it is not possible to determine whether issuance of a Small Take Authorization for this project would require formal rulemaking.

My interpretation of the potential for Level B harassment is drawn from the information presented in the document indicating that the calculated noise levels from detonations during operations at the proposed EOD-DTR are expected to be from 99 to 136 dB at 1250 feet. The estimates were based on measurements made at Ft. Lewis, WA (ref. EA, Table 3.3-4). In addition, Section 3.9.1.4, states that harbor seals regularly haul-out on Haul-out Rock located just off shore in Crescent Harbor 100 to 200 feet southwest of the preferred Terrace Site. At 200 feet Haul-out Rock is well within the 1250 foot radius where estimated sound levels would exceed 90 dB, where "alert and startle responses" are anticipated as potential adverse effects (Section 3.9.2.1). The location of Haul-out Rock is also within the 1075 foot radius of fragmentation arc from source detonations, according to the diagrams provided.

JUN 2000

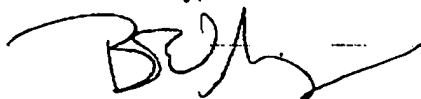
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In order to address the information needed to assess MMPA requirements, measurements of noise levels or Environmental Noise Model estimates of the detonation noise at Haul-out Rock should be included in the draft EA along with information on harbor seal usage patterns (numbers, seasonality, pupping activity etc.). In the absence of such information it is not possible to determine if the location of Haul-out Rock, at the base of the bluff, may afford it some protection from detonation noise, or whether some operational strategy could be implemented to mitigate or avoid disturbance (harassment) of the seals using the haul-out.

Please contact me at 206-526-6733 if you have further questions regarding these comments or for information regarding MMPA Small Take Authorizations.

Sincerely,

A handwritten signature in black ink, appearing to read 'B. Norberg', with a long horizontal stroke extending to the right.

Brent Norberg
Marine Mammal Coordinator

cc: Ken Hollingshead, NMFS, F/PR1

Se:N8
17 Apr 00

MEMORANDUM

From: Weapons Officer, NAS Whidbey Island
To: Commanding Officer, EOD Mobile Unit Eleven
Via: (1) Executive Officer, NAS Whidbey Island
(2) Commanding Officer, NAS Whidbey Island

Subj: RELOCATION OF EOD TRAINING RANGE

Encl: (1) Site Approval Request

1. The purpose of this memo is to provide the reasoning behind our request to relocate the EOD training range. At the time of initial request, magazines 444 and 445 were used for inert storage. The area was under utilized and was acceptable for use as the EOD training range with the magazines maintaining their status as explosive sited magazines and allowing the CO, NASWI to close the explosive detonation training range if the magazines are required for explosive storage. During the past four months, magazine utilization has increased by 30% and all magazines at the Seaplane Base magazine area are used for storage of explosives with the exception of magazines 444 and 445. These two magazines are site approved for up to 125K Net Explosive Weight (NEW), 1.1 explosives but cannot be used because it would effect EOD training. Adequate storage is not available at Ault Field magazines to accommodate additional explosive storage.

2. With the future growth of NAS Whidbey Island's mission, magazines 444 and 445 will soon be needed for storage of explosives. When this occurs, the sited EOD training ranges will no longer be available for use. At the present time, action is being taken to relocate the range to a suitable site that would meet both EOD training requirements and the air station's explosive storage needs.

3. Presently, NAS has the capability to store all required explosive stock without utilizing magazines 444 and 445. However, with the current utilization of all available magazines, we no longer have the storage flexibility to

accommodate future increases in mission or training ordnance for commands we support without the use of these two magazines. Our goal is to relocate the EOD training range prior to needing the magazines for storage and prevent interruption of EOD training.

4. An Environmental Assessment (EA) is in progress and an explosive site approval request for a new EOD training range is enclosed.

5. Please advise me of any questions, concerns or comments regarding this relocation process.

M. W. SHULTS



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Sustainable Fisheries Division
7600 Sand Point Way N.E., Bldg. #1
Seattle, Washington 98115-0070

June 1, 2000

1514-07

Mr. Steve Pennix
Naval Air Station Whidbey Island
Environmental Affairs Department
1155 W. Lexington Street B-113
Oak Harbor, WA 98278

Dear Mr. Pennix:

I was forwarded a copy of your letter of March 24, 2000, and asked to provide comments on the draft Environmental Assessment (EA) for relocating the Explosive Ordinance Disposal-Detonation Training Range (EOD-DTR) at Crescent Harbor, Whidbey Island, Washington. I have reviewed the draft in regard to potential effects of the proposed action on harbor seals (*Phoca vitulina*) that use nearby haul-out rocks in the project area. Based on my review, it appears that operational noise from the proposed EOD-DTR, could elicit repeated startle responses from harbor seals at "Haul-out Rock" which may result in the disturbance of usage patterns or abandonment of the site. Such disturbance would fall within the definition of "Level B" harassment, found in Section 3 (16 U.S.C. 1362) of the Marine Mammal Protection Act (MMPA), and would require an Small Take Authorization as outlined under Title I, Section 101 (16 U.S.C. 1371) of the MMPA.

Small Take Authorizations are issued, through an established public review process, by our headquarters, Office of Protected Resources, Marine Mammal Division. The Division contact for questions regarding the application process is Ken Hollingshead at 301-713-2322 x128. From the information provided in the EA, it is not possible to determine whether issuance of a Small Take Authorization for this project would require formal rulemaking.

My interpretation of the potential for Level B harassment is drawn from the information presented in the document indicating that the calculated noise levels from detonations during operations at the proposed EOD-DTR are expected to be from 99 to 136 dB at 1250 feet. The estimates were based on measurements made at Ft. Lewis, WA (ref. EA, Table 3.3-4). In addition, Section 3.9.1.4, states that harbor seals regularly haul-out on Haul-out Rock located just off shore in Crescent Harbor 100 to 200 feet southwest of the preferred Terrace Site. At 200 feet Haul-out Rock is well within the 1250 feet radius where estimated sound levels would exceed 90 dB, where "alert and startle responses" are anticipated as potential adverse effects (Section 3.9.2.1). The location of Haul-out Rock is also within the 1075 feet radius of fragmentation arc from source detonations, according to the diagrams provided.

78 JUN 2000

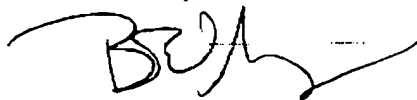
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In order to address the information needed to assess MMPA requirements, measurements of noise levels or Environmental Noise Model estimates of the detonation noise at Haul-out Rock should be included in the draft EA along with information on harbor seal usage patterns (numbers, seasonality, pupping activity etc.). In the absence of such information it is not possible to determine if the location of Haul-out Rock, at the base of the bluff, may afford it some protection from detonation noise, or whether some operational strategy could be implemented to mitigate or avoid disturbance (harassment) of the seals using the haul-out.

Please contact me at 206-526-6733 if you have further questions regarding these comments or for information regarding MMPA Small Take Authorizations.

Sincerely,

A handwritten signature in black ink, appearing to read 'BN', with a long horizontal stroke extending to the right.

Brent Norberg
Marine Mammal Coordinator

cc: Ken Hollingshead, NMFS, F/PR1